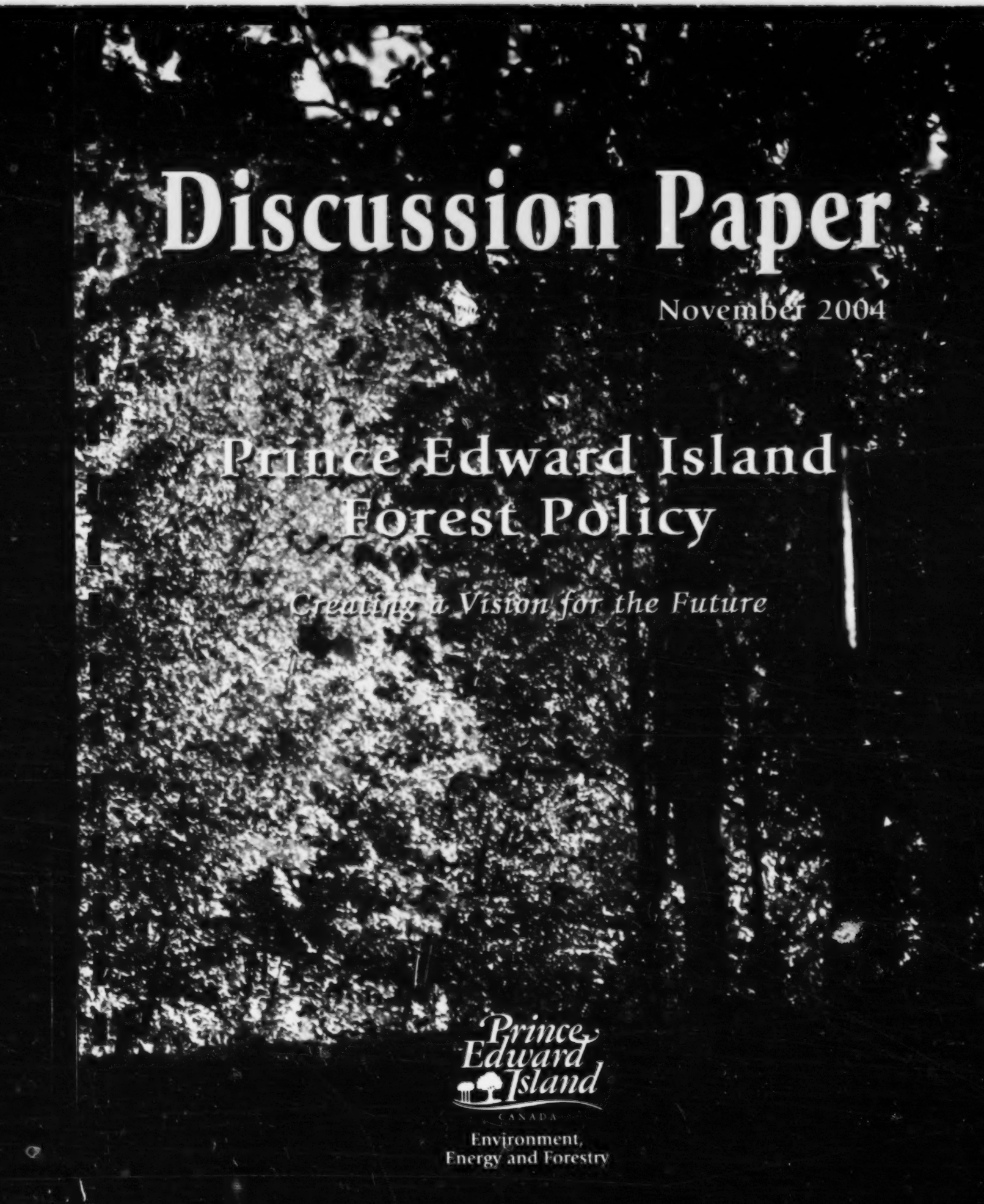

Discussion Paper

November 2004

Prince Edward Island Forest Policy

Creating a Vision for the Future

Prince Edward Island
CANADA

Environment,
Energy and Forestry

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Conversions

1 acre = 0.405 hectare
1 hectare = 2.47 acres
1 cord = 2.3m^3 solid wood
1 m^3solid wood = 0.435 cord

105-02730/

1.0 Executive Summary

The purpose of this paper is to stimulate public discussion on forest policy for Prince Edward Island. The **Introduction** outlines the changes within the Islands' forests and the forest industry, and the need for a policy review. As a starting point, it poses three Key Questions that are central to this review:

1. What is a forest?
2. What is **your** vision for the forests of Prince Edward Island?
3. What is Government's role in creating this vision?

Six **Critical Issues** have emerged from a review of existing documents, comments and recommendations. They are presented (in no particular order) as a "reality check" to see if work to date is on the right track. The list is intended to be both flexible and open-ended: the public should determine whether these are indeed the critical issues and whether there are others that meet the specified criteria and should be added. Each issue includes some Key Questions which are intended to stimulate thought and discussion. The full Discussion Paper presents additional background information, context, facts, figures, tables and images.

You can provide comments on the Key Questions and on anything else in the Discussion Paper in many ways:

- at public meetings to be held across PEI in the coming weeks
- through an on-line discussion forum at ***www.gov.pe.ca/go/forestpolicy***
- via e-mail to ***forestpolicy@gov.pe.ca***
- in writing to The Forest Policy Steering Committee, PEI Department of Environment, Energy and Forestry, Forestry Division - Upton Road, PO Box 2000, Charlottetown, PEI C1A 7N8.

Critical Issue # 1: Public Land

The Government of Prince Edward Island currently owns nearly 51,180 hectares of land across the province, of which nearly 60 per cent is wooded. This represents just 12 per cent of the Island's forests. All public land is held by the Department of Transportation and Public Works, with management responsibility often assigned to other departments who manage this land in accordance with their mandates and available resources. The Round Table's report described public lands as among the best-kept secrets in the province. Public access to these lands is important — there has been growing community interest in development of trails or other recreational opportunities in these areas. There have also been growing demands from the private sector for sale or donation of these lands, often by those wishing to convert them to non-forest uses.

Key Questions

1. Is Public Land a public priority?
2. What values do you see in public forest lands?
3. What should be the main goal(s) of public forest management?
4. What types of forest management and other activities should be encouraged in these areas?
5. Should the public be more involved in public land management? If so, how?

Critical Issue # 2: Forests on Unploughed Lands

By 1901, nearly 70 per cent of Prince Edward Island's forest had been converted to agriculture. Although the remaining forest has been extensively disturbed, forests growing on land that has never been cleared and ploughed are different from those regenerating on abandoned agricultural land. They are important reservoirs of native soils, species and genetic diversity, complex ecological interactions and carbon. They account for many of our remnant Acadian forest species such as American Beech, Yellow Birch, Sugar Maple, Eastern Hemlock, Eastern White Cedar and Black Ash, among others. Forests on unploughed lands cannot be created; at best, the current area could be maintained. However, pressures from other sectors continue to result in conversion of these areas to other uses such as agriculture and housing. Between 1900 and 2000, more than 23,000 hectares of this forest type was converted to non-forest uses, mostly since 1980. The trend is one of increasingly rapid decline.

Key Questions

1. Is conservation of PEI's remaining forests on unploughed lands a public priority?
2. If so, what is the role of Government?
3. What types of management should be encouraged or discouraged in these areas?
4. What types of management should be encouraged or discouraged in forests regenerating on ploughed (agricultural) land?
5. Given that nearly 90 per cent of the forest land on PEI is privately owned, how should management be encouraged or discouraged?

Critical Issue # 3: Quality of Life

While timber and non-timber products are generally easy to quantify, natural wealth – the value of non-commodity goods and services – is rarely reflected in the balance sheets. Forests make significant contributions to water quality and quantity, air quality, wildlife habitat, species diversity and landscape aesthetics. For example, forests contribute to decreased flooding and erosion, increased ground water recharge and drinking water quality, and improved aquatic habitats. Trees help filter air, removing pollutants and tiny particles that can cause respiratory problems. Forests are an important part of the Island landscape, which in turn is important to both the tourism industry and the well-being of Islanders. Services such as these have tremendous value and contribute to our quality of life. Public concern about issues such as water quality has been increasing, while forest area – including species-rich forest types and those associated with rare plants and animals – has been decreasing.

Key Questions

1. Are forests' contributions to quality of life a public priority?
2. If so, what is the role of Government?
3. Should Government aim to increase the area of forest on PEI by creating new forests? If so, how should this be done (in terms of species used and gaining landowner support) and what areas should be priorities?

Critical Issue # 4: Education and Training

Education is widely recognized as an important tool in promoting sustainable forest management.

Although landowners have become more aware of the many values their forests provide and are interested in a wider range of management options, the pool of skilled people to do this work is small. There is a variety of Government and non-government educational initiatives designed for landowners, students, teachers and the public, but few training opportunities for those preparing forest management plans or implementing treatments.

Increasing urbanization plays a role in public education and awareness, and the disconnect between people and the forests that produce products they use every day. Increasing standards for safe work practices, high workers' compensation rates, a lack of training opportunities and an aging workforce contribute to a lack of people able to provide types of forest management that have not traditionally been offered by the industry.

Key Questions

1. Is forest-related education and training a public priority?
2. If so, what is the role of Government?
3. What are the best methods for reaching the target audience(s) and motivating people to make good stewardship decisions?
4. Should minimum education or training standards be established for industry? If so, what should these include?

Critical Issue # 5: Plantations and Planting

Planned natural regeneration can be an important forest management tool and an appropriate course of action. However, for sites that are not regenerating adequately, or that are regenerating in species other than those the landowner wants, planting can assist or replace natural regeneration. Between 1990 and 2000, the J. Frank Gaudet Tree Nursery in Charlottetown produced more than 25.4 million seedlings. In keeping with the existing forest policy, 99 per cent of these were the softwood species preferred by industry; the balance included nearly a dozen species of native hardwoods produced for enhancement of private and public lands.

Production of softwoods is easier and less expensive than production of hardwoods; in general, it costs up to three times as much to produce a hardwood seedling compared to a softwood seedling. Additionally, tree improvement work has allowed the nursery to produce softwood trees with better growth and form. For example, this work has resulted in height gains of 15 per cent in White and Black Spruce by age 11.

Together, the Forest Renewal and Provincial Forests Programs plant more than 90 per cent of the seedlings produced annually, usually in commercial plantations of one or two species. The Forest Renewal Program pays 70 per cent of the cost of plantation establishment on private lands and industry and landowners contribute the remaining 30 per cent. Industry does not make direct contributions to forest management on public land. Other provincial initiatives including the Forest Enhancement Program, Greening Spaces Program, Sustainable Resource Conservation Program, Wildlife Conservation Fund and Wildlife Habitat Improvement Program plant trees in areas other than plantations and together account for 10 per cent of the seedlings planted annually.

There are differing views about plantations: for many people, replanting harvest sites is a reasonable and responsible thing to do and a wise investment in the future. Others see plantations as a simplification of the forest ecosystem and recommend alternative types of forest management.

Key Questions

1. Are plantations and/or other types of plantings a public priority?
2. If so, what is the role of Government?
3. Where and how should plantations be established?
4. Industry and landowners jointly pay 30 per cent of the cost of plantation establishment, while landowners pay 33 per cent of the cost of other types of plantings. What percentage of the costs of plantation establishment should come from the private sector? What percentage of the costs of other types of plantings should come from the private sector?

Critical Issue # 6: Forest Products

During the 1990s, areas of even-aged old field White Spruce maturing at the same time allowed the softwood sector to grow. During this decade, sawlog and studwood harvest tripled to an unsustainable level of 344,000m^3, pulpwood harvest doubled, the area of forest harvested annually tripled and mechanization increased from 10 per cent to more than 80 per cent. Economic returns generated from this activity are estimated to be about $40 million annually. Pressure on softwood stands remains high and the shortage that has been predicted since the 1980s is on the horizon. As softwood supplies decline, pressure on mixed-wood and hardwood stands is expected to increase.

PEI has a thriving value-added sector that processes wood into top-quality products such as moldings, flooring, stair components, furniture, cabinets and giftware. Most of the higher-value manufactured wood products are made from hardwood species such as Birch and Maple. In comparison to investment in the softwood component of the Island's forest, little has been expended on hardwood management. In 2000, the PEI Association of Wood Product Manufacturers estimated that this industry contributed $8.3 million in salaries and wages and a total of $38 million to the economy of PEI. Opportunities for expansion within this sector exist.

While timber remains the primary product harvested from the Island's forests, interest has increased in non-timber forest products. The highest-profile of these is Ground Hemlock, although its harvest has recently generated public concern about theft, trespass and sustainability. Demand for Balsam Fir tips for wreaths is also growing. Potential exists for the development of new non-timber forest products, with the Ground Hemlock experience an important cautionary note.

Forest certification is expanding in the marketplace, especially in Europe and the United States. Although standards vary greatly among the different certification systems, there is now nearly 58 million hectares of certified forest land in Canada. PEI is the only province in Canada with no certified forest land. A group of landowners is considering one of the systems, and woodlot owners' associations across Canada have been developing a new system designed for small, privately owned woodlots.

Key Questions

1. Are forest products a public priority?
2. Should PEI continue to focus on the high-volume softwood sector, or put more effort into wood used by the value-added sector?
3. What support should there be for non-timber forest products on PEI?
4. Should PEI explore options for forest certification?
5. What is the role of Government and the private sector?

2.0 Introduction

Changing Forests, Changing Attitudes

Prince Edward Islanders have long had an intimate relationship with their forests, and this has evolved over time. For the Island's original Mi'kmaq peoples, this relationship included a deep cultural and spiritual link, in addition to the practicalities of food, clothing, shelter, tools and medicine. Out of necessity, the later European settlers held a strictly utilitarian view: at best, the Island's forests were a source of wood for housing, fuel and ships; at worst, an impediment to essential agriculture.

By 1900, nearly 70 per cent of the original forests had been cleared for agriculture and settlement. The remaining woodland was not only severely fragmented, it had also been extensively disturbed though harvest of trees for lumber and fuel wood, livestock grazing and human-caused fires. Wildlife such as martin, fisher, caribou and lynx had disappeared from the Island by this time, and innumerable non-native plant species were accidentally and intentionally introduced.

The first calls for forest conservation here were rooted in a concern for the settlers' future needs for wood rather than the needs of the forests themselves. Later, concerns about landscape were added, but very few looked beyond utility and aesthetics. While forests will always be important for the wood they supply and their contributions to the landscape, we are increasingly aware of their important contributions to wildlife habitat, clean air and water, and a host of other ecological, social and economic benefits. It is no longer sufficient to measure forest productivity strictly in terms of volume of timber produced, or value only by the dollars contributed to our economy. Concepts of forest health and quality are important, and are linked with our quality of life and long-term prosperity.

While our view of forests changes, so do the forests themselves. Released in 2003, the *State of the Forest Report* gives a clear picture of these changes during the 1990s and the trends we can expect in the future. Forest area decreased for the first time in a century and the forest that remains is younger and lower in volume than it was a decade ago. The Island's forest industry cannot be sustained at current levels; the shortage of merchantable softwood - predicted since the 1980s – is imminent. As softwood supplies decline, pressure on mixed-wood and hardwood stands is expected to increase. While these factors create challenges for PEI's forest sector, they also present opportunities to explore new products and services.

PEI's current forest policy was released in 1987. It was based on the 20-year Forest Development Plan, which was designed to support industry objectives. The key elements and direction of the policy thus centred on commodities: improving the quality and growth rate of merchantable timber and expanding export of pulpwood and wood products. It doesn't adequately address the full range of forest values and no longer reflects the realities in the Island's forest sector. Additionally, although several departments are mandated to manage provincially-owned forest lands, the current policy is used only by the Forestry Division. For all these reasons – our evolving view of forests, changes within both the forests and the forest industry, and the need to better coordinate forest management efforts among departments – a new Forest Policy is needed. A new policy can build on the view of forests as communities, and suggest strategies to enhance and sustain related ecological, social and economic values.

What Is a forest?

Although it was not explicitly defined in the 1987 Forest Policy for Prince Edward Island, *forest* meant any land that was in any stage of producing trees. Under this definition, clearcuts are forests. While this is an accepted definition based on land use, landowner and public attitudes toward clearcutting suggest that many people do not view clear-cuts as forests.

A clear-cut is generally defined as an area of land from which more than 90 per cent of the merchantable trees have been cut or removed and on which there is no evidence of conversion to non-forest use. A plantation is an area of land on which trees were established through planting to a prescribed density (often 2,200 to 3,200 seedlings per hectare). Plantations are generally managed to favour one or two species of trees for wood production.

Your Role

A policy sets out general goals and guidelines under which programs will operate. In laying out a new Forest Policy for PEI, it is critical to: (1) understand Islanders' vision for the forest and (2) identify the critical issues. This Discussion Paper was prepared from a review of the results and recommendations from existing documents such as the *Report of the Round Table on Resource Land Use and Stewardship* (1997); the *Woodlot Owners of Prince Edward Island: A Survey of their Forest Use, Management and Values* (2003); the *State of the Forest Report* (2003); the *State of the Environment Report* (2003) public opinion surveys; and the Public Forest Council's public meetings, as well as comments provided through the Forest Policy Web site (***www.gov.pe.ca/go/forestpolicy***) and other sources.

This Discussion Paper is an interim step in policy development – a "reality check" to see if work to date is on the right track. It provides historical background and current context, and presents some critical issues. Public feedback on the Discussion Paper will shape the new Forest Policy for Prince Edward Island. It can only be a success if you take the time to let us know whether we have correctly identified the critical issues, and whether you think we are going in the right direction. Each section of this paper ends with some Key Questions to stimulate thought and discussion.

You can provide comments on the Key Questions and anything else in the Discussion Paper in many ways:

- at public meetings to be held across PEI in the coming weeks
- through an on-line discussion forum at ***www.gov.pe.ca/go/forestpolicy***
- via e-mail to ***forestpolicy@gov.pe.ca***
- in writing to The Forest Policy Steering Committee, PEI Department of Environment, Energy and Forestry, Forestry Division - Upton Road, PO Box 2000, Charlottetown, PEI C1A 7N8.

Key Questions:

1. What is a forest?
2. What is **your** vision for the forests of Prince Edward Island?
3. What is Government's role in creating this vision?

Red Pine plantation

Mixed forest

Old field White Spruce

Clearcut

3.0 Critical Issues

The purpose of this paper is to stimulate public discussion on forest policy. As a starting point, recurring themes from existing documents and preliminary public comments have been organized into six Critical Issues which are presented in no particular order. This list is intended to be both flexible and open ended: the public should determine whether these are indeed the key issues for Islanders and whether there are others that should be added.

A Critical Issue should meet the following criteria:

- be meaningful to the public;
- be appropriate for action at a provincial level; and
- be enduring rather than transient (Forests and forestry operate in decades or longer. An issue that may be topical today but likely not so a decade or more from now would not be a good critical issue.).

Based on these simple criteria, the following six Critical Issues are suggested:

- Public Lands
- Forests on Unploughed Land
- Quality of Life
- Education and Training
- Plantations and Planting
- Forest Products

Some topics cross many areas and so do not make good stand alone Critical Issues. For example, clearcutting is a recurring theme in existing documents, however, it is intertwined with each of the six areas identified above. While it was not selected as a Critical Issue, answers to the Key Questions should address clearcutting and other types of forest harvest.

For each Critical Issue, information is supplied on background, current status, any trends that are known, and comments or recommendations from previous reports. Strategies to address these Critical Issues should be based on direction from the public and so this paper does not make recommendations. Rather, key questions are asked and your responses to these will help shape the new Forest Policy for Prince Edward Island.

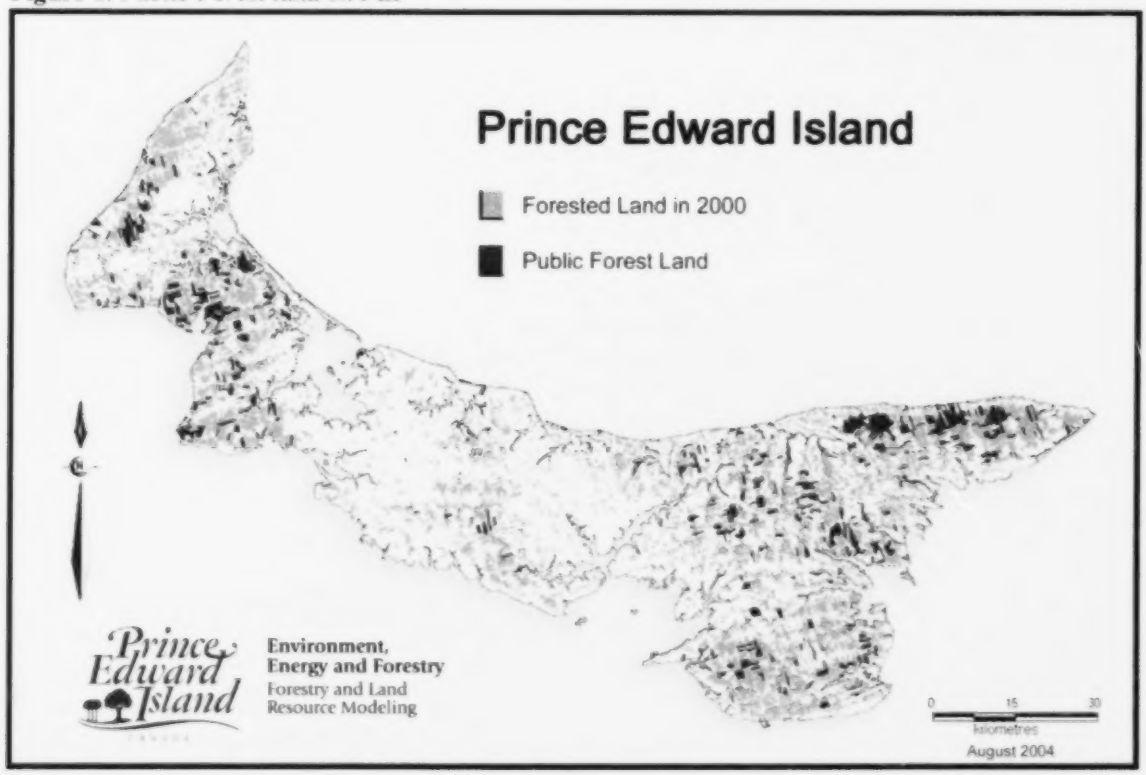
3.1 Critical Issue # 1 — Public Lands

Background

The Government of Prince Edward Island currently owns nearly 51,180 hectares[1] of land across the province, of which nearly 60 per cent is wooded (Figure 1). This represents just nine per cent of the total area of the province (and 12 per cent of the forest), giving PEI the smallest proportion of public land of any province in Canada. These lands were acquired by the Province from private landowners through purchase, tax sales and property trades; the legacy of land management decisions made by previous owners is evident. Often, these lands were once farmed, and among the first to be abandoned either because they were poorly drained and marginal for agriculture or because the soil quality had deteriorated. For this reason, the overall quality of these lands may be lower than that for the province as a whole. Table 1 provides a summary of the types of forest found in the province and on public land.

Provincial Forest sign

Figure 1: *Public Forest land on PEI*



[1] Numbers current as of June 2004. 1 hectare = 2.47 acres.

Table 1: *Area of forest in Prince Edward Island from the 2000 Land Use Inventory. Area is rounded to the nearest hectare and per cent to the nearest tenth (0.1); per cent may not total 100 due to rounding.*

Forest Type[2]	Area (ha) in 2000		Per cent of Total	
	All Lands	Public Lands	All Lands	Public Lands
Upland forest[2]	47,665	3,225	18.1%	10.9%
Wet rich forest	40,926	5,246	15.5%	17.7%
Black Spruce	20,743	6,757	7.9%	22.8%
Old field White Spruce	41,691	3,057	15.8%	10.3%
Disturbed	65,695	7,775	30.0%	26.2%
Burned, windfall and alder	7,190	793	2.7%	2.7%
Clearcut	17,474	504	6.6%	1.7%
Plantation	15,731	3,229	6.0%	10.9%

PEI's Comprehensive Provincial Land Policy governs retention, disposition and acquisition of public lands. Public lands have been reviewed by the interdepartmental Provincial Land Review Subcommittee and identified as either essential to the needs of the province, or surplus and eligible for disposition. The Policy favours retention of coastal areas, protected areas, wetlands, greenbelts, and potential highway rights-of-way, as well as Provincial Forests and other significant forest lands, wildlife habitats, beaches and dunes, geological features, heritage places and archaeological sites. Lands with high capability for agricultural production were often identified as surplus and better held by the private sector.

Red Pine plantation, Muddy Creek

Surplus lands may be sold or leased at fair market value, subject to certain conditions. These conditions include restrictions on subdivision for residential or non-resource uses, protection of watercourses and appropriate erosion control and other stewardship measures. Proceeds from sales of surplus lands may be used for acquisition of resource lands to meet provincial objectives.

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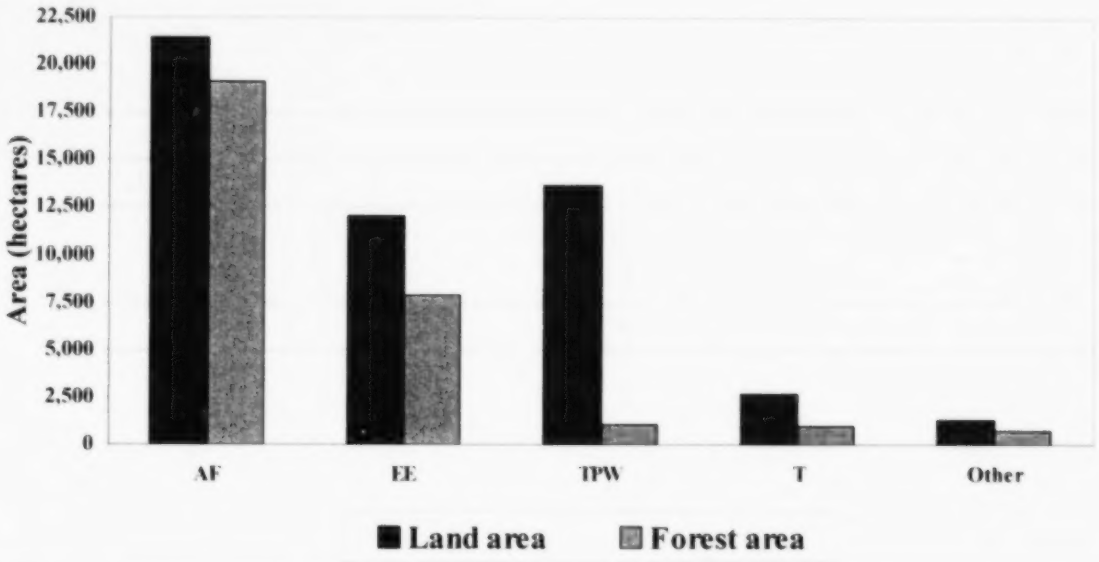
[2] **Upland forest** includes species such as American Beech, Sugar Maple, Yellow Birch and Eastern Hemlock; **Wet rich forest** includes Red Maple, American Elm, White Ash and Eastern White Cedar; **Black Spruce** includes this species on both wet and dry sites; **Old field White Spruce** is former agricultural land that has been abandoned and is regenerating in White Spruce; **Disturbed** lands are those that do not fall into any other category, and include areas with species such as Trembling Aspen and White Birch, among others.

All public land is held by the Department of Transportation and Public Works, with management responsibility usually assigned to other departments (Figure 2). The managing agencies are responsible for making decisions in accordance with their own mandates and resources. Examples of management activities include trail development, research, wood harvest, tree planting and road construction, among others.

Figure 2: *Departments that manage public land on Prince Edward Island. AF - Agriculture Fisheries, Aquaculture and Forestry; EE - Environment and Energy; TPW — Transportation and Public Works; T — Tourism; Other includes Attorney General, Community and Cultural Affairs, Education, and lands that are managed jointly by two or more departments.*



By law[3], harvest of forest products from these lands must be publicly tendered. During the 1990s, there was interest in keeping more of this public wood from being shipped off-Island, thus increasing the local value-added benefits. Following consultation with industry, Government decided to accept bids for standing timber only from Island sawmills. Some managing agencies have expressed concern that this invited tendering excludes some of the smaller harvesters that may be interested in providing alternative management such as select harvesting and patch cuts.

In the late 1990s, growing concerns about mechanization from the manual harvest industry was coupled with concerns about softwood export from sawmillers. In response, in 1999 the Forestry Division began to require that at least 50 per cent of the tendered wood harvested from land it managed must be felled manually. There is a shortage of manual woods workers throughout the Maritimes and industry has been having more and more difficulty in meeting the manual harvest requirement. Lack of training opportunities, increasing occupational health and safety requirements, and difficulties retaining skilled workers and recruiting new ones have contributed

[3] *The Forest Management Act.*

to this shortage. There have been recent requests from industry to lower the Provincial Forest manual felling requirement to 10 per cent, or eliminate it entirely.

Approaches to management of public forest lands differ among managing agencies, reflecting the mandate of each. For example, Tourism lands are managed for protection and provision of recreational opportunities. Forested lands held by Environment and Energy include protected natural areas, land managed for wildlife within Wildlife Management Areas, and wooded buffers around watercourses or public ponds. Forestry Division lands are managed for sustainable wood supply, wildlife conservation, biodiversity, recreation, training facilities, job creation, forest education and other community benefits. Table 2 summarizes activities undertaken on public forest lands in 2003.

Table 2. *Management activities on public forest lands in 2003.*

Activity	Area
Tree Harvest	
Clear-cuts	99.5 ha
Patch-cuts	27.1 ha
Strip-cuts	7.4 ha
Thinning	15.3 ha
Tree Planting	116.6 ha
Plantation Maintenance	
Chemical	34.8 ha
Manual	35.4 ha
Road Construction	0.2 km
Road Maintenance	17.1 km
Trail Construction	1.5 km
Trail Maintenance	11.5 km

Tolerant hardwood stand, Valleyfield

Trends

There are two key trends affecting public forest land: increasing demand on these areas from the private sector and shortages of manual harvesters.

Demands on public land

Demands on public lands include requests from local communities to develop trails or other recreational opportunities; proposals from individuals or groups for the sale or donation of public lands (often by those wishing to convert them to agricultural, blueberry, residential or other non-forest uses); and pressure from individuals or communities to harvest wood or other products from these areas without a public tender. As the softwood resource is liquidated on private lands, there may be future calls from the private sector to access wood on public lands. Additionally, as outdoor recreation and ecotourism grow in popularity, requests for access to and development on public lands to support this are likely to increase.

With more than 90 per cent of the land in private ownership, PEI's public lands provide important areas for recreation, birdwatching, hunting, fishing, trapping, hiking and other outdoor activities. Although it is difficult to track, there are anecdotal reports of the appearance of more "no trespassing" signs on private lands throughout the Island. There have also been calls for revision of the province's trespass legislation. Growing concern about trespass on private land may further increase demands for recreational access to public land.

Manual harvesters

In each of the past few years, sawmillers have found it more and more difficult to find skilled manual harvesters to meet the requirements of the standing wood tenders. Increasing standards for safe work practices, tighter requirements under the *Occupational Health and Safety Act* and high Workers' Compensation rates, coupled with a declining interest in manual labour, have contributed to this shortage. Island sawmillers have requested reduction or elimination of the requirement that 50 per cent of wood harvested from lands managed by the Forestry Division be felled manually. There have also been requests from the forest industry to return to an open process for standing wood tenders (rather than the invitations to sawmillers). Wood harvests from lands managed by the Forestry Division generates approximately $280,000 annually.

Comments and Recommendations to Date

In its chapter on *Provincial Lands*, the **Round Table report** described these areas as one of the best-kept secrets in the province. It noted that Islanders who provided input agreed that there should be more public involvement in management of these areas, that these lands should be role models of good management, and that great care should be exercised before any public land is leased or sold. The report insisted that the public be involved in management decisions, and recommended that management plans be subject to public review and comment every five years. It also recommended that management plans should first promote diversity, and should include small patch-cuts or shelterwood cuts and preferential management for native late-successional species. In addition to recommending a "no net loss" policy for public land, the chapter on *Managing Landscape and Biodiversity* recommended that Government retain and expand public land in watersheds where 50 per cent or more of the land is under agricultural or urban use.

The **Public Forest Council** also found that there is keen interest in these lands among the public. In addition to wanting more information about where public forests are, what's on them and how they are used, there was interest in having more public involvement in the management decisions. There was also interest in having more public access to small quantities of forest products. Many comments at the Public Forest Council meetings centred on the need to increase emphasis on the many values of forests: wildlife, plants, fishing, birdwatching, water protection and recreation were mentioned specifically. The Demonstration Woodlots were mentioned favourably, and it was suggested that their focus could be expanded to highlight the full range of forest management techniques.

The 1997 **Provincial Forest Consultation Questionnaire** found that 100 per cent of respondents supported the creation of Provincial Forests and Government's retention of forested land. The majority (75 per cent to 100 per cent) supported forest and timber improvement, recreational access, wildlife conservation, natural areas protection, educational uses, and development of non-timber forest products.

Public opinion surveys show that between 2000 and 2003, the proportion of respondents who were satisfied with recreational access to publicly-owned land decreased from 93 per cent to 77 per cent, while the proportion who agreed that public forests are managed properly increased from 44 per cent to 51 per cent.

Key Questions

1. Is public land a public priority?
2. What values do you see in public forest lands?
3. What should be the main goal(s) of public land management?
4. What types of forest management[4] or other activities[5] should be encouraged in these areas?
5. Should the public be more involved in public land management? If so, how?

[4]Examples of forest management activities could include clear-cutting, patch-cutting, strip-cutting, thinning, select harvest, crop tree release, enrichment planting, tree pruning, plantation establishment and maintenance, herbicide use, planting native species, planting non-native species, creating roads, creating trails, and enhancing wildlife, among others.

[5]Examples of other types of activities could include forest and wildlife research, experimental plantations of non-native species, tree seed improvement, and public education, among others.

3.2 Critical Issue # 2 — Forests on Unploughed Land

Background

Early writers described this province as an island covered with forests dominated by shade-tolerant species: American Beech, Sugar Maple, Yellow Birch, Eastern Hemlock, and Pine among others. Some wrote of Red Pine masts more than 22 metres tall and 60 centimetres in diameter being harvested from PEI. Others described Eastern Hemlock of more than a metre in diameter and 27 metres tall, and Yellow Birch nearly two metres across and towering above the forest floor. It is estimated that in the early 1800s, forests would have covered some 95 per cent of this province; the average age of these trees would have been in the hundreds of years.

Hardwood on unploughed land

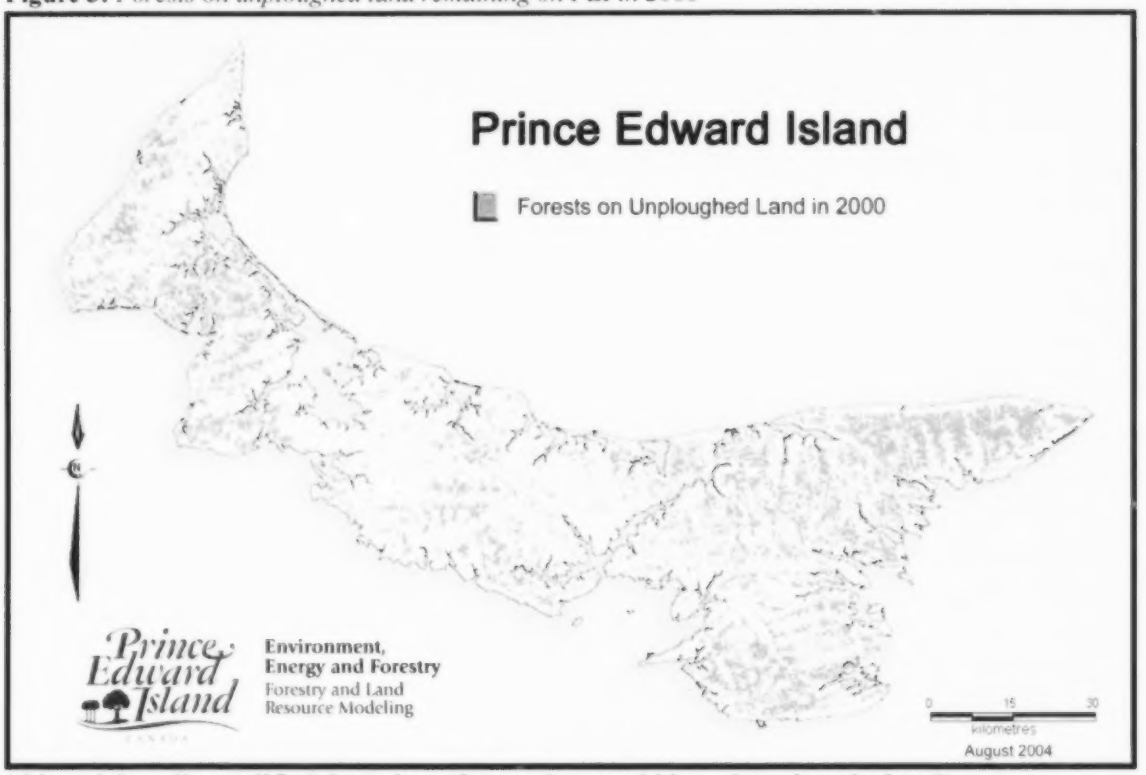
By 1901, PEI's population had grown from a few thousand people to more than 100,000, and nearly 70 per cent of the Island's forest had been cleared and the land ploughed for agriculture. The remaining forest had been extensively disturbed through a combination of harvest of trees for construction materials, fuel and wood export, and from past cycles of human-caused fires. In spite of this, forests growing on land that has never been cleared and ploughed are different from those regenerating on abandoned agricultural land. On drier sites, these forests can be identified by the presence of uneven ground formed from the uprooting and slow decomposition of fallen trees. Sometimes called *pits and mounds* or *cradle hills*, this topography takes centuries to form and is not found on land that was farmed.

By analyzing PEI's 1935 aerial photography and removing the regenerating agricultural land, areas that were still in forest by 1900 can be mapped. Those that had not been converted to other uses in subsequent aerial photos (1958, 1974, 1990, and 2000) are forests on unploughed land. Based on this mapping, there are roughly 154,000 hectares of this type of forest on PEI (Figure 3).

Some forests on unploughed land are comparatively undisturbed, late-successional areas. While this is rarely true "old growth," this term is sometimes loosely used, and does appear in some of the comments and recommendations to date. Other areas have been more intensively cut-over or clear-cut; in some cases, commercial conifer plantations have been established. In 2000, about 94 per cent of this forest was native species, 5.5 per cent was in a clear-cut state and 0.2 per cent had been planted in non-native species. Despite their history of disturbance, forests on unploughed land account for much of the area of our remnant Acadian forest species such as American Beech, Yellow Birch, Sugar Maple, Eastern Hemlock and Black Ash, among others.

Because of this – and the characteristics noted below – these areas offer the best chance for forest restoration efforts.

Figure 3: *Forests on unploughed land remaining on PEI in 2000*



Although heavily modified from those forests that would have been here before European settlement, forests on unploughed land have some important characteristics. For example:

- **Soils** — Soils are living, complex systems where physical, chemical and biological factors interact. Ploughing and farming soil disturbs the top horizons and causes huge changes in structure, chemistry and biology. It compacts the pores between grains that are important to aeration and water movement, leads to decreases in organic matter and changes in nutrient ratios, and causes major changes in soil flora and fauna (such as worms, insects, bacteria and fungi). Soils that have been ploughed, cultivated, compacted, and eroded by rain and meltwater do not retain native plant seed banks, micro-organisms or animals such as ground beetles and other insects. Unploughed lands have the only remaining forest soils on PEI.

- **Native species diversity**[6] — Forests on unploughed land are home to several hundred species of native plants, including many that are important for economic or ecological reasons. Medicinal plants such as Ground Hemlock, Dwarf Ginseng and Witch Hazel, rarities such as showy orchids and delicate Grape Ferns, and popular wildflowers such as Painted and Nodding Trilliums can all be found in these forests. Increased attention to and research in these areas is finding plants previously thought to be absent from PEI. Although less is known about mosses and lichens, many are unique to forests growing on unploughed land. Lichens in particular are important indicators of habitat and air quality, and can be used to detect both short- and long-term trends in local environmental conditions. These forests are also important to a variety of birds. Partners in Flight – an international bird conservation program – has ranked specific types of older forest communities in this region as high priorities for conservation.
- **Species interactions** — Forests are home to a range of complex interactions that researchers are only just beginning to understand. For example, new research has discovered that fungi on the beaks of woodpeckers play a key role in the decay of dead trees, helping to create high-quality cavity trees that are used many other species. Similarly, Flying Squirrels help spread beneficial fungi throughout a forest; these fungi help trees acquire important nutrients. Ants play an important role in spreading the seeds of as many as 30 per cent of the spring flowering plants in these forests. These and many other complex interactions occur in forests on unploughed lands.
- **Resistance and adaptation** — The diversity of species and ages in forests on unploughed land makes them better able to resist disturbances such as disease, insects and fire. Additionally, recent research from eastern Canada suggests that as forests age they tend to increase in genetic diversity and reproductive success. Older forests may be better able to adapt to climate change, and other emerging issues such as the arrival of new forest insects and diseases.
- **Carbon storage** — Increased concentrations of carbon dioxide in the atmosphere has been linked to global warming and climate change. Older mixed forests are tremendous reservoirs of carbon, keeping it locked up in twigs, leaves, stems, debris, roots and soil – and thus out of the atmosphere – for centuries. Because older forests store large amounts of carbon for long periods, it is widely recognized that maintaining these areas is important in the carbon cycle. Researchers in New Brunswick concluded that replacing older mixed forests with faster-growing trees would lead to substantial net emissions of carbon.

In short, forests on unploughed land are important reservoirs of soils, species and genetic diversity, complex ecological interactions, and carbon.

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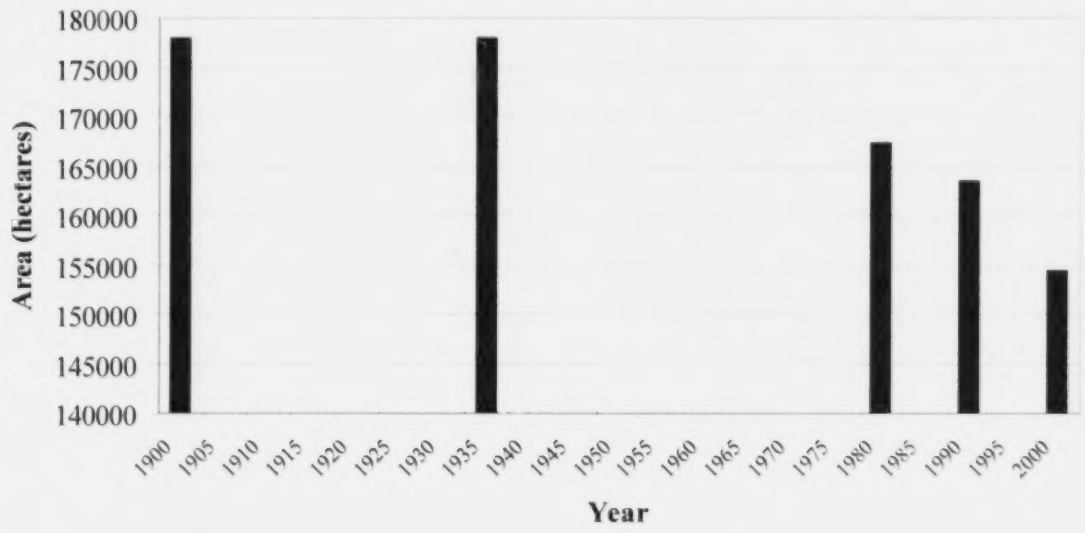
[6] Species diversity is more than just numbers. A cut-over might have more plant species than an upland hardwood site, but these will be mostly common species that have very general habitat requirements (e.g. weedy native species such as raspberry and bracken fern or non-native species such as hawkweeds). The upland hardwood site may have fewer plants, but these will include less common native species and those with more specific habitat requirements (e.g. rattlesnake fern, zigzag goldenrod). Raspberry and bracken can persist without cut-overs, but rattlesnake fern and zigzag goldenrod need specific types of forest.

Trends

By their very definition, forests on unploughed land cannot be created; at best, the current area could be maintained. While these forests have not be subject to the intense harvesting seen on abandoned agricultural lands over the last decade, recent increases in fuel oil could lead to new pressures for fire wood and other energy needs. Additionally, pressures from other sectors continue to result in conversion of these areas to non-forest uses such as agriculture and housing. With nearly 40 per cent of the conversions since 1900 happening within the past decade, the trend is one of increasingly rapid decline (Figure 4).

Figure 4. *Area of forest on unploughed land on Prince Edward Island from 1900 to 2000. During this century, more than 23,600 hectares of this forest were converted to non-forest uses, with the pace of conversion increasing during the past decade.*



Comments and Recommendations to Date

The **Round Table report** only specifically mentioned "old growth" forest once, noting that very little remains. However, it recommended a reduced emphasis on softwood reforestation and more silvicultural work in late-successional stands, which would include forests on unploughed land. The report also recommended that the abundance and distribution of forest communities be among the indicators of diversity.

The **Public Forest Council**'s meetings found that the public is interested in species diversity and rarity, forest protection and old growth/late successional forest.

As with public lands, Islanders have expressed strong interest in forests on unploughed land, especially the term *old growth*. The **Woodlot Owners' Survey** found that 60 per cent of respondents agreed that more efforts should be made to protect old growth forests. Although two additional questions relating to forest protection did not specify old growth or forests on

unploughed land, they do reveal landowners attitudes to protection: 51 per cent of respondents were concerned about the lack of incentives for preservation and 63 per cent agreed that Government should provide incentives for private owners to establish protected areas.

Island Nature Trust has identified late-successional upland hardwoods as under-represented in PEI's protected areas network and has recommended that the area of these forests under protection be expanded.

Key Questions

1. Is conservation of Prince Edward Island's remaining forests on unploughed land a public priority?
2. If so, what type(s) of management[7] should be encouraged or discouraged in these areas?
3. What type(s) of management should be encouraged or discouraged in forests regenerating on ploughed (agricultural) land?
4. Given that nearly 90 per cent of the forest land on PEI is privately owned, how should management be encouraged or discouraged[8]?

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[7]Examples could include clear-cutting, patch-cutting, strip-cutting, thinning, select harvest, crop tree release, enrichment planting, tree pruning, plantation establishment and maintenance, using herbicides, planting native species, planting non-native species, creating trails and enhancing wildlife, among others.

[8]Activities can be encouraged or discouraged through means including regulation, education, technical advice/assistance, and incentives or disincentives such as taxation.

3.3 Critical Issue # 3 — Quality of Life

Background

Forests are and will continue to be important for the timber and non-timber products they provide; these are discussed in Section 3.6. While forest products are generally easy to quantify, natural wealth – the value of non-commodity goods and services – is rarely reflected in the balance sheets. Forests contribute to water quality and quantity, air quality, habitat and species diversity and landscape aesthetics. These goods and services are directly connected to the quality of life Islanders enjoy, as well as to the long-term prosperity of this province.

Typical Island landscape of water, farm and forest.

Water Quantity and Quality — Clean and abundant water is essential to every Islander and many of this province's industries. Forests make significant contributions to both ground and surface waters, for example:

- During heavy rains, the leaves, twigs and branches of multi-layered forests intercept as much as 25 per cent of the water that falls on them. This water then evaporates and returns to the atmosphere, rather than rushing into streams and rivers where it would increase flooding and erosion.
- Much of the rain that reaches the forest floor slowly makes its way to the underground aquifers that supply us with drinking water and recharge streams and rivers. In this way, a forest is like a sponge: rather than allowing rainfall to runoff quickly into watercourses, it stores water and releases it more slowly.
- This slow-release not only reduces soil erosion, it also allows forests to filter rainwater and runoff, which further contributes to good-quality ground and surface water.
- Watersheds with more forest often have better water quality. For example, a 1997 survey found that streams in the Dunk River – a watershed where forest cover has been reduced to 27 per cent – had more than 2.2 mg/L of nitrate, compared to less than 0.2 mg/L in the Morell River, which is within a watershed that is 67 per cent forested.
- Forests play a major role in the entire cycle of water collection, purification and redistribution. Trees can pump water from below the ground up to their branches and leaves and out into the atmosphere where it can again fall as rain.
- Forests along streams and rivers not only help filter runoff, they also provide important wildlife habitat, keep the water from getting too warm for the plants and animals that live there, and contribute leaves and other organic matter that is the base of the aquatic food chain. These riparian forests can be among the most productive areas in the province, and are critically important for both surface water quality and wildlife.

In short, forests contribute to decreased flooding and erosion, increased groundwater recharge and drinking water quality, and improved aquatic habitat. These services have tremendous value. For example in 1996, New York City's Water Department estimated that it would cost $6 billion US to build (plus $500 million US annually to operate) a water treatment system to perform the services provided by the forests of the Catskill and Delaware watersheds. The city decided instead to invest $1.5 billion to protect these watersheds and its water quality.

Air Quality — Trees help filter air, removing pollutants such as sulphur dioxide and carbon monoxide, heavy metals and tiny particles that can cause respiratory problems. A recent study found that in one 200-hectare urban park, trees removed 20 kilograms of particulates, four kilograms of nitrogen dioxide, nearly three kilograms of sulfur dioxide, and one kilogram of carbon monoxide every day. The value of these air cleaning services was estimated at US$136 per day based upon pollution control technology.

Wildlife Habitat and Species Diversity — Forests provide critical habitat for many of Prince Edward Island's native plants and animals. Canadian research has found that as forest area decreases so do populations of forest-dependent species, and Environment Canada has suggested that at least 30 per cent of any watershed should be in forest cover. The vast majority of this province's native species – nearly 900 types of plants, more than 300 species of birds, 24 mammals, 10 amphibians, and three reptiles – rely directly on forests, or on wetlands that depend on forests for water quality and quantity. Some of these plants and animals are important for the products they provide (i.e., lumber, food, furs, medicines). Collectively, our wildlife and habitat also provide opportunities for outdoor recreation and learning. A study by Environment Canada found that in 1996, people spent $24.6 million in nature-related activities on PEI, which resulted in economic impacts of $87.8 million and sustained 690 jobs.

Landscape Aesthetics — The landscape is important to Islanders and is the cornerstone of Prince Edward Island's tourism industry. Public opinion surveys show that more than 95 per cent of Islanders agree that the mix of farms and forests creates an attractive landscape for PEI. Similarly, economic impact reports consistently show that sightseeing and soft outdoor adventure are the key reasons tourists choose for visiting this province, ranking well above beach visits, shopping or other activities. In 2003, visitors spent an estimated $345.6 million while here on vacation or business. Covering 45 per cent of the Island, forests make significant contributions to PEI's scenery, its tourism industry and the well-being of Islanders.

Heritage road, Queen's County

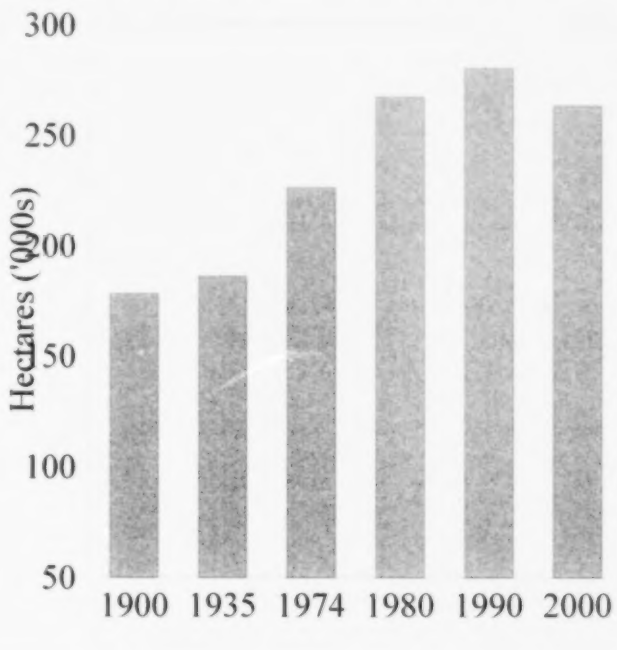
Trends

Public opinion surveys show that between 2000 and 2003, Islanders' concerns about water quality increased significantly. Nitrate levels in Island streams have been increasing for decades, more rapidly in low-forest cover watersheds than in those with more forest area. The *State of the Environment Report* shows that nitrate levels in private wells have been increasing steadily for the past 20 years, and that the number of tested wells exceeding Canadian Water Quality Guidelines has increased from 3.5 per cent in 2000 to 5.2 per cent in 2002.

The *State of the Environment Report* indicates that PEI's air quality is good, meeting or exceeding national standards. The report did not find any trends in the indicators it selected: sulphur dioxide concentrations, acid rain and particulate matter.

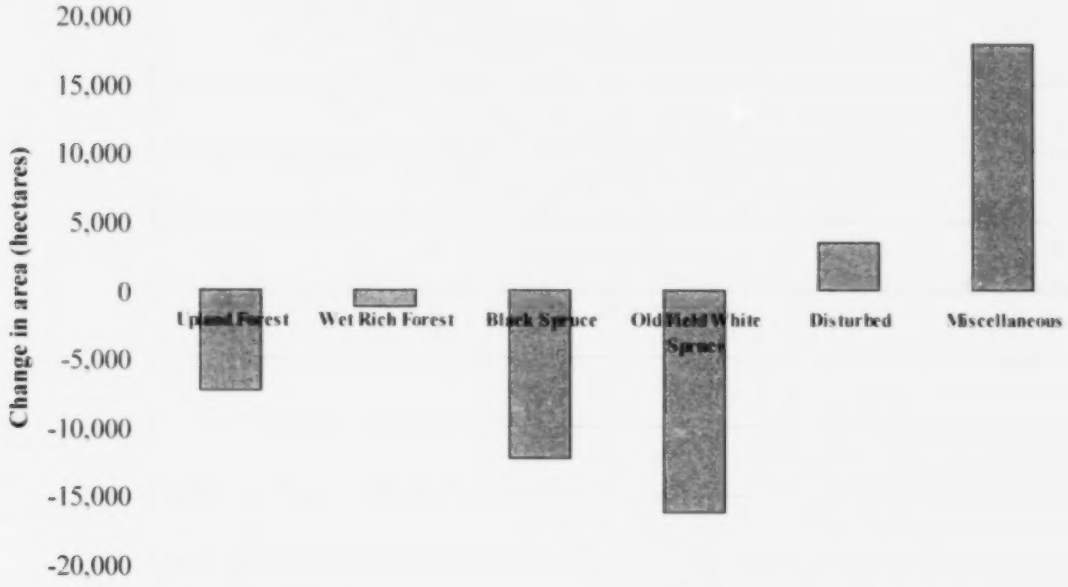
Changes in area and composition affect the societal values forests provide. The *State of the Forest* report shows that since 1990, six per cent of the forest (about 16,500 hectares) was converted to other uses, primarily agriculture. This was the first time in a century that forest area on PEI decreased (Figure 5). The report also notes that PEI's forest is younger and lower in volume than it was in 1990 (average tree age was 48 years in 1990 and 44 years in 2000; volume was 31.9 million cords in 1990 and 24.1 million cords in 2000).

Figure 5: *Forest area on Prince Edward Island during the 20th century. (Please note that the bottom axis is not to scale).*



Over the past decade, the area of species-rich forest communities and those associated with rare plants and animals decreased, while the area of species-poor communities with high proportions of non-native species increased. For example, as shown in Figure 6, the Miscellaneous forest type had the greatest change in area since 1990 - an increase of 17,920 hectares. With respect to ground flora, this community has the lowest native species richness and the highest proportion of non-native species. Some of these communities are temporary. For example, if it is not converted to non-forest use, an area classed as cut-over (Miscellaneous) will regenerate naturally, or may be actively managed to become one of the more species-rich forest communities in the future.

Figure 6: *Changes in the area of PEI's forest communities (types) between 1990 and 2000.*
Upland Forest is defined by the presence of Sugar Maple, American Beech, Yellow Birch and Eastern Hemlock; **Wet Rich Forest** includes Red Maple, American Elm, White Ash and Eastern White Cedar; **Black Spruce** includes this tree on both wet and dry sites; **Old Field White Spruce** is former agricultural land that is regenerating in White Spruce; **Disturbed** areas are those without the above-noted indicator species (e.g. areas with trembling aspen or white birch); and **Miscellaneous** includes cut-overs, plantations, burned areas, windfall and alders.



Comments and Recommendations to Date
In its chapter on *Managing Landscape and Biodiversity*, the **Round Table report** noted that it is preferable to encourage rather than legislate the establishment and maintenance of hedgerows and alternate forest harvest practices. It reported that research suggests a minimum area of forest and other permanent vegetation is needed to maintain a healthy watershed; habitat and water quality decrease when agricultural use exceeds 50 per cent, or when urbanization exceeds between 10 per cent and 20 per cent. It recommended that Government assist community groups to implement management plans that address the issue of maintaining minimum forest cover, and retain and expand public land in watersheds where 50 per cent or more of the land is under agricultural or urban use. It also recommended financial incentives to improve existing hedgerows and establish new ones. Finally, it recommended indicators for measuring progress, including: the abundance and distribution of forest communities; forest edge to interior ratio; abundance of forest interior wildlife; and kilometres of hedgerow per area of farmland.

The top reasons that respondents to the **Woodlot Owners' Survey** gave for owning forest related to quality of life issues: future generations, green space, ecosystem conservation, wildlife, heritage and water quality. Cutting selectively to maintain wildlife habitat was deemed an acceptable management technique by 75 per cent of respondents, while 71 per cent agreed with leaving clumps of trees for wildlife habitat. While this suggests ownership and management for societal values are more important than harvest for wood products, virtually all of the harvest activities in PEI occur on private land.

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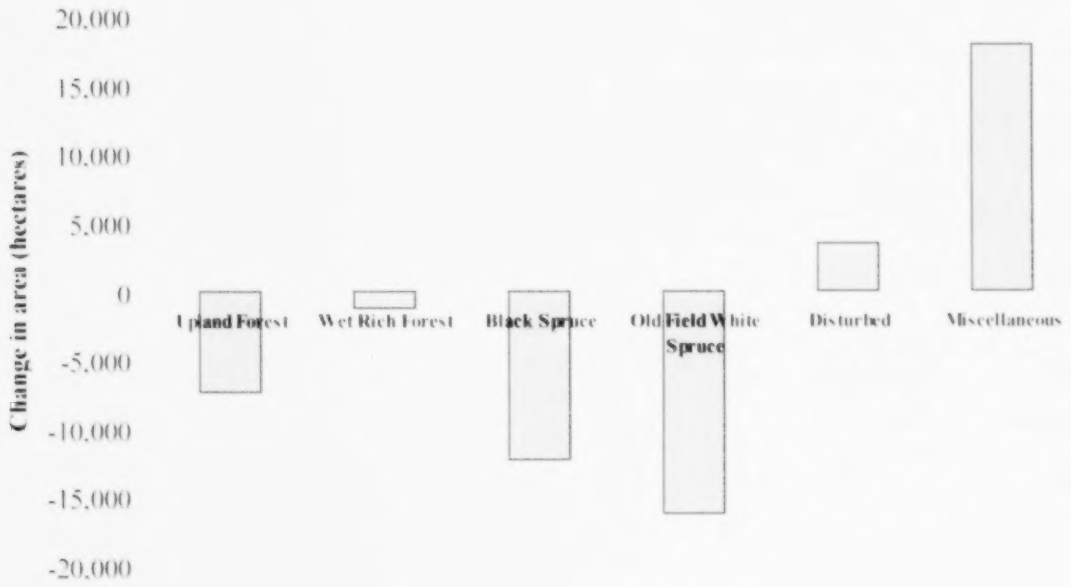

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Public opinion surveys show that while more than 90 per cent of Islanders agree that the mix of farmland and forest creates an attractive landscape, 64 per cent feel that forestry practices reduce this attractiveness.

Key Questions

1. Are forests' contributions to quality of life a public priority?
2. If so, what is the role of Government?
3. Should Government aim to increase the area of forest on PEI by creating new forests? If so, how should this be done (in terms of species used and gaining landowner support) and what areas should be priorities?

3.4 Critical Issue # 4 — Education and Training

Background

Education is widely recognized as an important tool in promoting sustainable forest management. Unlike agricultural land owners, woodlot owners rarely do their own work. While a farmer will be directly involved in planting, tending, harvesting and selling a crop, most woodlot owners rely on Government and industry to do on-the-ground forest management for them. As a result, these landowners very much depend on advice they receive from forest technicians, private contractors, neighbours and other landowners, private consultants or watershed management groups. Educational programs for landowners, contractors and other forest professionals, and the general public all have a role to play in the future of forests on Prince Edward Island.

Island teachers tour a Provincial Forest in Brookvale

As has been identified in earlier sections, access to a skilled labour force able to implement a range of forest management options is limited. Higher standards for safe work practices, increasing occupational health and safety requirements, high workers' compensation rates, increasing mechanization, a lack of training opportunities and an aging workforce who are generally less interested in manual labour have all contributed to a shortage of silvicultural workers. Harvest of old field White Spruce and other conifer-dominated stands is still the priority for many contractors who are reluctant to get involved with more expensive, labour intensive and technically difficult types of management. While there seems to be growing interest among landowners in implementing treatments such as thinnings, patch cuts, crop tree release and select harvest, the pool of skilled people to do this work is small. The Forest Enhancement Program provides incentives to cover two-thirds of the cost of this work, but the

industry in general has not yet taken advantage of it. The limited funds currently available in this program, combined with the fact that it is funded on an annual (rather than permanent) basis, may make it too risky for the private sector to make significant investments in training.

There is a variety of Government and non-governmental educational initiatives within the province (Table 3). For example, six Demonstration Woodlots use public forest lands to illustrate concepts of forest management, harvest and ecology. Every year, thousands of people visit these woodlots to enjoy the trails and learn about forest stewardship. The Greening Spaces Program provides Island schools with native trees and shrubs, as well as technical assistance, to establish shelter belts, educational arboreta and plant nurseries. Through Greening Spaces projects, and a companion interactive CD-ROM, school grounds can become outdoor laboratories for learning about the many values of trees.

Creating amphibian habitat.

The annual Atlantic Teachers' Tour gets educators out to the forest to see first-hand how forests are managed and harvested, and how legislation and societal values affect forestry practices. They also explore how the forest products we use everyday are made, and learn more about the types and ranges of career opportunities their students can find in the forest sector. The annual Provincial Forests *Envirothon* involves high school students in practical, hands-on learning about environment and natural resources issues.

Government is not the only agency involved in forest-related education. For example, the Macphail Woods Ecological Forestry Project provides extensive summer learning programs for both children and adults, has produced a range of educational booklets, offers workshops, talks and tours, and operates a site to demonstrate forest restoration on public land. The Forest Improvement Association operates a Web site, has produced a booklet of voluntary sustainable management practices for forest contractors and hosts training workshops for industry. The PEI Woodlot Stewards' Co-op has hosted workshops and tours for landowners. Other groups such as Island Nature Trust and the Public Forest Council have educational projects and materials aimed at landowners, industry and the public. Non-governmental community and watershed groups across PEI have established woodland trails, tree and shrub nurseries and other projects that have educational components.

Table 3. *Examples of recent and/or ongoing forest education products and programs on Prince Edward Island. This is not intended to be a comprehensive list, but rather an example of the range of initiatives and agencies involved.*

Lead Agency	Product/Program	Target Audience
PEI Forestry and Land Resource Modelling Division (Department of Environment, Energy and Forestry)	*Woodland Notes* series	Landowners
	Forest Management Notes series	Landowners, industry, public
	On-line Forest Library and Research Information	Landowners, industry, public
	Chainsaw safety courses and sharpening clinics	Landowners, industry, public
	Demonstration Woodlots and properties on the Web	Landowners, industry, public
	Provincial Forests' *Envirothon*	Students and teachers
	Greening Spaces Program and interactive CD ROM	Students and teachers
	Atlantic Teachers' Tour	Teachers
	Forest Enhancement Program (management plans)	Landowners
	Forest Renewal Program (extension)	Landowners
PEI Conservation and Management Division (Department of Environment, Energy and Forestry)	Partner in *Envirothon*	Students and teachers
	Wildlife Week and Environment Week	Students, teachers, public
	Educational brochures	Public
Public Forest Council	Virtual Forest Learning Centre Web site	Landowners, industry, public
	Non-timber forest product information sheets	Landowners, industry, public
	Non-timber forest product forum	Landowners, industry, public
	The Forest Is More Than Just a Bunch of Trees video	Landowners, public
Forest Improvement Association	*Voluntary Sustainable Management Practices for Forest Contractors*	Industry
	Oregon Chain Filing Clinics	Industry
	Web-based information	Landowners, industry
Island Nature Trust	Riparian Zone Demonstration Projects	Landowners, industry, public
	Woodland Natural Areas series	Public
Macphail Woods Ecological Forestry Project	*Forest Fact Sheets* series, as well as various publications on native trees and shrubs and forest management	Landowners, public
	Demonstration site	Landowners, public
	Workshops, talks and tours	Landowners, public, students and teachers
	Web-based information	Landowners, public, students and teachers
PEI Model Forest Network Partnership Inc.	Funding support for a range of sustainable forest projects	Landowners, industry, public
PEI Woodlot Stewards' Co-operative	Private Demonstration Woodlots	Landowners
	Forest Restoration Workshop	Landowners

Trends

Increasing urbanization is a societal trend that plays a role in education and awareness. With a greater proportion of the population living in towns and cities comes a disconnect between people and the forests that produce the products they use every day. At the same time, landowners have become more aware of the many values their forests provide, and are interested in a range of management options. This range includes activities (such as hardwood management) that have not traditionally been offered by the industry. There is a need for increased educational opportunities for the public and landowners and training for the forest professionals who will be preparing management plans and providing silvicultural work.

Comments and Recommendations to Date

The **Round Table report** recommended that areas within Provincial Forests be reserved for specific uses, including public education. It identified a general lack of understanding among the public of how food and forest products are produced, and recommended that information about the environmental, social and technical aspects of resource land use and stewardship be incorporated into school curricula.

During the **Public Forest Council's** consultations, many people suggested that school curricula should educate tomorrow's woodlot owners and decision makers on the many values of forests. While the school system has responded in many ways, these lessons often occur in the classroom without benefit of the real, hands-on exposure to Island forests.

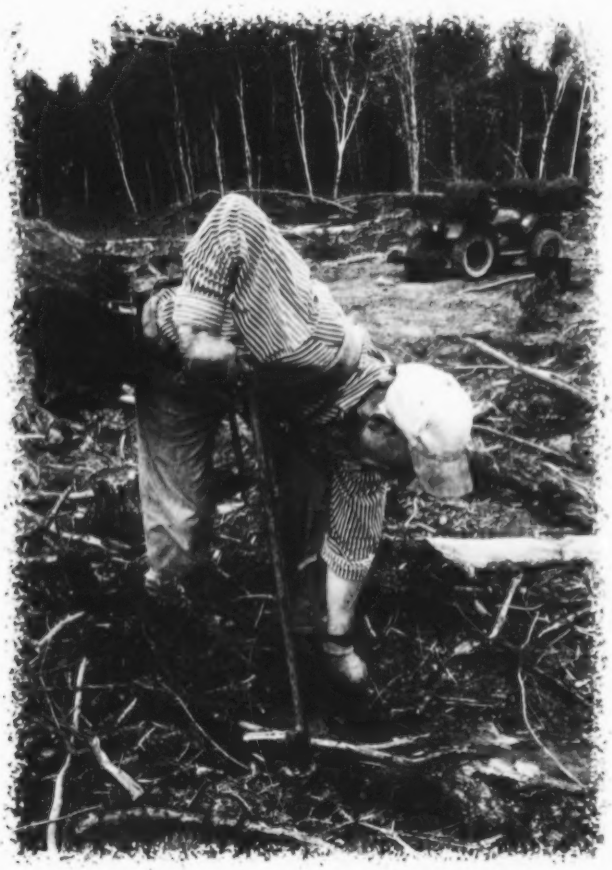
The **Woodlot Owner Survey** found that many landowners identified the need for accurate and timely information about options for forest harvest and management. They also wanted to know more about non-timber and non-consumptive forest products and opportunities, and how to manage and market these products. Respondents reported that talking with a forester, pamphlets or newsletters and books are the most useful educational tools.

Public opinion surveys consistently show that a majority (94 per cent to 98 per cent) agree that the school curriculum should include information about agriculture, forestry and environment. Nearly half of the forestry-related questions of the 2003 survey had more than 25 per cent of respondents indicating "don't know" or "no opinion," which may indicate a widespread lack of understanding of forestry issues.

Key Questions:

1. Is forest-related education and training a public priority?
2. If so, what is the role of Government?
3. What are the best methods for reaching the target audience(s) and motivating people to make good forest stewardship decisions?
4. Should minimum education or training standards be established for industry? If so, what should these include?

3.5 Critical Issue # 5 — Plantations and Planting



Typical private land planting site.

Background

Unless converted to a non-forest use, harvested woodlands will regenerate naturally. Planned natural regeneration can be an important management tool and the appropriate course of action. For sites that are not regenerating adequately, or that are regenerating in species other than those the landowner wants, planting can assist or replace natural regeneration.

Prince Edward Island's current forest policy was based on the 20-year Forest Development Plan, released in 1986. Designed to support industry objectives, the Development Plan proposed planting and forest improvement work; for example, it recommended production of 25.1 million seedlings during the 1990s. Between 1990 and 2000, the J. Frank Gaudet Tree Nursery in Charlottetown produced more than 25.4 million seedlings (Table 4). In keeping with the recommendations of the Development Plan, Government concerns about the declining amount of softwood on PEI, and a policy that aimed to maintain the area of softwoods, 99 per cent of these were the conifers preferred by industry. The balance included nearly a dozen species of native hardwoods produced for enhancement of private and public lands and work by watershed and community groups. The nursery also produces ornamental stock for private nurseries.

In recent years, the Nursery has increased the numbers of later successional softwood and hardwood species it produces. For example in 2003, combined production of Eastern White Cedar, Eastern Hemlock, Sugar Maple, Red Maple, White Ash, White Birch, Yellow Birch, Red Oak and American Elm was more than three times the annual average of the 1990s, representing about 3 per cent of the 2003 seedling production. Additionally, the Nursery produces range of native shrubs such as Red Osier Dogwood, Wild Raisin and Elderberry.

Production of softwood trees is easier and less expensive than production of hardwoods. Unlike conifer seed, most hardwood seed cannot be stored for long periods of time. The need to rely on the current year's crop makes seed availability less predictable. Because several years' supply cannot be collected at once, seed collection is more costly. Typically, hardwood seeds also have

lower viability (the number able to germinate), require more time and care in the nursery, and – once planted – need protection from mice and snowshoe hares. In general, it costs up to three times as much to grow a hardwood seedling as it does to grow a softwood seedling.

PEI's long history of land clearing and high-grading (cutting the best trees) has left a forest with diminished genetic quality. Seedlings at the Nursery are grown from improved seed produced at the Dover Seed Orchard and other Provincial Forest lands. "Plus trees" with excellent characteristics were identified throughout PEI, and grafted onto rooting stock. Seed from the orchards allows the Nursery to produce trees with better growth and form. For example, this work has resulted in height gains of 15 per cent in White and Black Spruce by age 11. Tree improvement work also includes testing non-native species such as exotic larches, Norway Spruce and European Birch, among others.

Table 4: *Numbers of seedlings produced at the J. Frank Gaudet Nursery between 1990 and 2000. Percentages may not be exact due to rounding.*

Species	Number	% of total	Species	Number	% of total
White Spruce	6,455,000	25.3	White Birch	16,000	0.06
Black Spruce	5,316,000	20.9	Blue Spruce	14,000	0.06
White Pine	3,790,000	14.9	Jack Pine	13,000	0.05
Eastern Larch	2,444,000	9.6	Sugar Maple	5,000	0.02
Norway Spruce	2,132,000	8.4	Scots Pine	4,000	0.02
Red Pine	2,036,000	8	Red Maple	3,000	0.01
Balsam Fir	1,167,000	4.6	Apple	1,000	<0.01
Japanese Larch	859,000	3.4	Black Ash	800	<0.01
Red Spruce	598,000	2.4	Elm	700	<0.01
Austrian Pine	349,000	1.4	Norway Maple	700	<0.01
Yellow Birch	119,000	0.47	Hybrid Poplar	700	<0.01
Red Oak	42,000	0.17	English Oak	300	<0.01
White Ash	40,000	0.16	Wild Rose	300	<0.01
Eastern White Cedar	36,000	0.15	Chestnut	200	<0.01
Eastern Hemlock	22,000	0.09	Total	25,465,000	100

Together, the Forest Renewal and Provincial Forests Programs plant more than 90 per cent of the seedlings produced annually, usually in commercial plantations of one or two species. Through the Forest Renewal Program, Government pays 70 per cent of the cost of plantation establishment on private lands, and industry and landowners contribute 30 per cent. The Provincial Forests Program manages public lands assigned to the Forestry Division, and pays

100 per cent of the cost of plantation establishment and other silvicultural work. Similarly, other Departments cover the costs of silvicultural work they do on lands that have been assigned to them for management.

By 2000, these programs had established 15,731 hectares of plantations, which represents approximately 6 per cent of the area classified as forest on PEI (Figure 7). Although softwood harvest sites and abandoned agricultural lands are the targets for replanting, commercial softwood plantations have occasionally been established in other areas. For example, approximately 7 per cent of the area of late-successional upland hardwood that Island Nature Trust identified as clear-cut between 1990 and 1997 was replanted with conifers, primarily spruce.

The public assesses these programs by the numbers of seedlings planted annually, but successful plantation establishment requires more than just tree planting (Table 5, Figure 8). Increasing the numbers of seedlings planted in any one year increases the maintenance workload and costs in subsequent years; plantations have traditionally been a public responsibility to grow, plant and maintain, but a private responsibility when it comes time to harvest. Additionally, there are differing opinions about plantations: for some, replanting harvest sites is a reasonable and responsible thing to do, and a wise investment in the future (Table 6). Others see plantations as a simplification of the forest ecosystem with higher risks for loss to insects, disease or other factors, and recommend other types of forest management.

Figure 7: *Public and private land plantations*

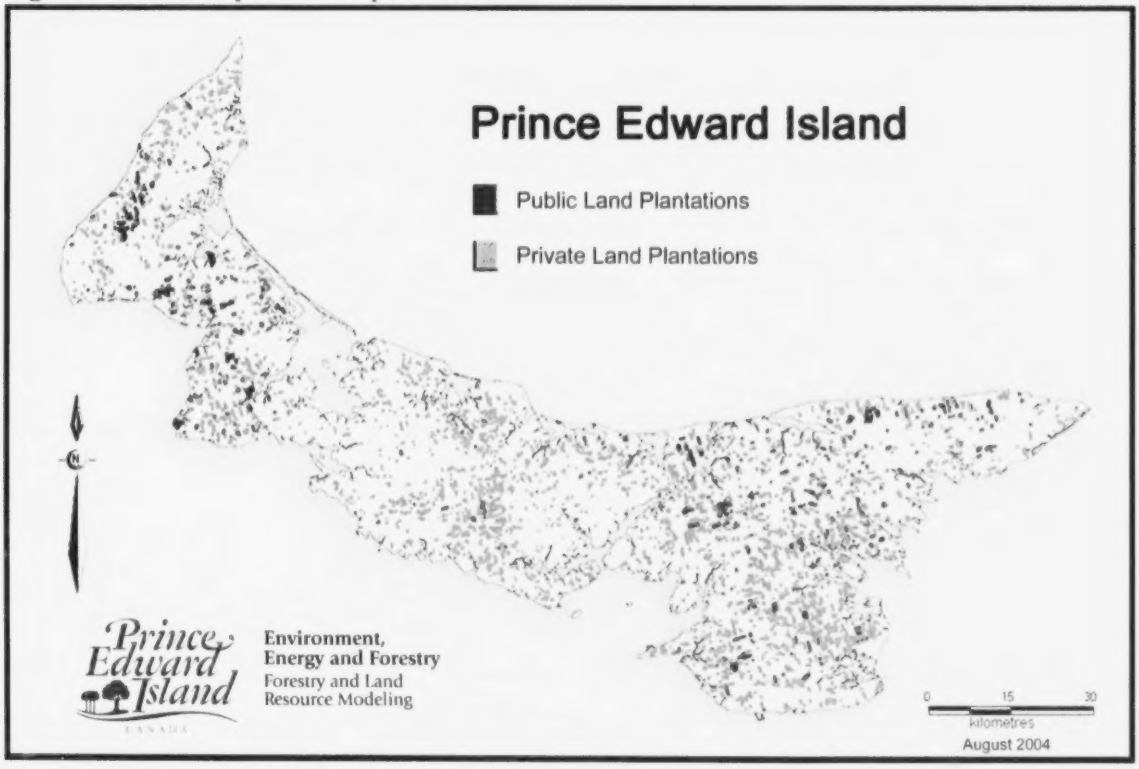


Table 5. *Steps in establishment of a commercial softwood plantation.*

Year	Activity	% of Planting Sites Treated	Description
1	Site Preparation	99	Done manually or mechanically with equipment such as rhome disc, brush rake or anchor chains which distribute brush left from the harvest and expose soil for planting, or chemically with herbicides to kill vegetation before planting. This can also reduce losses to weevil and thus improve success rates.
1 - 2	Planting	100	Seedlings are planted in densities of 2200 to 3200 per hectare, depending on the species (e.g. Eastern Larch: 2200 to 2500 per hectare; Red Pine, White Spruce and Balsam Fir: 2500-2800/ha; Black Spruce: 2500-3000/ha; White Pine: 2900-3200/ha).
3 - 4	Fill Planting	10	Seedlings that did not survive may be replaced.
3 - 4	Chemical Maintenance	39	Vegetation growing around the planted conifers is removed by herbicide.
4 - 7	Manual Maintenance	35	Vegetation growing around the planted conifers is removed by hand tool or hand held powered tool such as a spacing saw.
8 - 20	Manual Maintenance	60	Vegetation growing around the planted conifers is removed by hand tool or hand held powered tool such as a spacing saw.
10 - 20	Pruning	15	Lower branches are removed from the high-quality planted trees to improve wood quality. (Mostly for White and Red Pine).
18 - 30	1st Commercial Thinning	55	Some of the planted conifers are removed to give those that remain more space to grow.
40+	2nd Commercial Thinning	30	Some of the planted conifers are again removed to give those that remain more space to grow.
40+	Regeneration Treatments	80	Planting or enhancement of natural regeneration to take the place of trees planted in year 1 or 2.
50+	Options	90	The remaining merchantable trees may be harvested in a final cut. Depending on the goals for the site, management may begin the cycle again, or promote advanced regeneration to direct the stand to a new type of forest. Plantations with White Pine, Red Spruce or a hardwood component should not have a final cut. These longer-lived species should be kept as seed and shelterwood.

Table 6. *Examples of the potential stumpage values from softwood plantations established on old field cut overs. These per-hectare estimates assume a 50-year rotation, the present cost-sharing ratio between Government and the private sector, and stumpage values of: $20/cord ($8.33/m³) for pulpwood, $40/cord ($16.67/m³) for studwood from thinnings and unplanted sites, $60/cord ($16.67/m³) for studwood from the final harvest of planted sites, $60/cord ($25/m³) for sawlogs from thinnings and unplanted sites and $80/cord ($33.33/m³) from sawlogs from the final harvest of planted sites.*

Scenario	Treatment	Total Cost/ha	Products and Volume/ha	Stumpage Revenue/ha
Not planted	None	None	Poplar pulp - 40m³ Spruce/fir pulp - 40m³ Spruce/fir studwood - 30m³	$1,167
Planted - Black Spruce	Site preparation, planting, maintenance, cleaning, first commercial thinning and final harvest	$1,925 Private - $578 Government - $1,347	***Thinning (year 25):*** Spruce pulp - 25m³ Spruce studwood - 25m³ ***Final harvest (year 50):*** Spruce pulp - 50m³ Spruce studwood - 100m³	$3,541 Thinning: $625 Final harvest: $2,916
Planted - White Spruce	Site preparation, planting, maintenance, cleaning, first and second commercial thinnings and final harvest	$1,925 Private - $578 Government - $1,347	***First thinning (year 25):*** Spruce pulp - 25m³ Spruce studwood - 25m³ ***Second thinning (year 35):*** Spruce pulp - 25m³ Spruce studwood - 25m³ Spruce sawlogs - 25m³ ***Final harvest (year 50):*** Spruce pulp - 50m³ Spruce studwood - 100m³ Spruce sawlogs - 100m³	$8,124 First thinning: $625 Second thinning: $1,250 Final harvest: $6,249
Planted - Norway Spruce	Site preparation, planting, maintenance, cleaning, first and second commercial thinnings and final harvest	$1,925 Private - $578 Government - $1,347	***First thinning (year 25):*** Spruce pulp - 25m³ Spruce studwood - 25m³ ***Second thinning (year 35):*** Spruce pulp - 25m³ Spruce studwood - 50m³ Spruce sawlogs - 25m³ ***Final harvest (year 50):*** Spruce pulp - 50m³ Spruce studwood - 100m³ Spruce sawlogs - 200m³	$11,874 First thinning: $625 Second thinning: $1,667 Final harvest: $9,582

Figure 8: *Commercial thinning in a Red Pine plantation*

In addition to Provincial Forests and Forest Renewal, there are other Provincial Government programs that contribute to non-plantation plantings. The **Forest Enhancement Program** assists landowners with management plans and non-clearcut treatments such as strip cuts, patch cuts, enhancement plantings and crop tree release. Landowners contribute 33 per cent of the cost of the work, and Government contributes the remaining 66 per cent, up to set maximums. The **Greening Spaces Program** assists schools and community groups who want to plant trees to provide wildlife habitat, create outdoor learning centres, protect watercourses, control erosion, provide shade or diversify properties. There is no cost to participants, and the program provides native tree and shrub seedlings, technical advice and small grants. The **Sustainable Resource Conservation Program** assists farmers with on-farm conservation projects, including establishing hedgerows and planting along streams and rivers. Landowners contribute 33 per cent of the cost and Government contributes the balance, up to set maximums. The **Wildlife Conservation Fund** and **Wildlife Habitat Improvement Program** provide financial assistance for tree planting projects done by non-governmental groups. Together, the above programs account for approximately 10 per cent of the seedlings planted annually.

Trends

Government pays 70 per cent of plantation establishment costs on private lands and 100 per cent of the cost on public lands. Compared with other provinces, this is an exceptional level of support: PEI's public contributions to private land forest management are the most comprehensive in Canada. Conversely, industry makes direct contributions to silvicultural work on public lands in all provinces except PEI.

Numbers of trees planted on public and private lands have remained relatively stable over the past decade, with an average of 2,050,000 planted per year on private lands and 280,000 per year on public lands. At the same time, the area of forest harvested has been increasing therefore more lands are regenerating naturally. In 2005, fewer trees will be available for establishment of private land plantations under the 70:30 funding ratio because of limited Government funding. Tree numbers for 2006 have not yet been set.

Climate change is a global trend that has implications for tree planting programs: decisions made today need to consider what conditions might be like decades from now. It has been suggested that seed from local sources may not be well-suited to warmer climates, or able to adapt to rapid climate change. Additionally, while there is general agreement that our climate is getting warmer, predictions differ on whether it will result in a wetter or drier environment for this region. More precipitation could mean reduced access for forestry activity at certain times of year, while less precipitation could mean increased risk of fire.

Comments and Recommendations to Date

The **Round Table report** recommended changes to reduce the emphasis on softwood reforestation and encourage other types of management. Specifically, it recommended that: the J. Frank Gaudet Tree Nursery continue to increase its production of late-successional hardwoods; incentives for alternatives to clear-cutting and plantation establishment be increased; and incentives for plantations of single-species and non-native species be removed.

The **Woodlot Owners' Survey** found that a minority of respondents (24 per cent) agreed that using herbicides to control unwanted vegetation was an acceptable practice, and a similar proportion (23 per cent) agreed that converting sites from mixed-wood to softwood was acceptable. The only question that specified planting asked whether respondents had recently planted or planned to plant trees in the future: 21 per cent had planted trees in the past five years and 22 per cent planned to in the next five.

Public opinion surveys consistently show that less than 20 per cent of respondents agree that enough trees are being planted. Nearly one-third responded "don't know" or "no opinion", which suggests many people may not be aware of the amount of replanting or the role of natural regeneration.

Key Questions:

1. Are plantations and/or other types of plantings a public priority?
2. If so, what is the role of Government?
3. Where and how should plantations be established?
4. Industry and landowners jointly pay 30 per cent of the cost of plantation establishment while landowners pay 33 per cent of the cost of other types of plantings. What percentage of the costs of plantation establishment should come from the private sector? What percentage of the costs of other types of plantings should come from the private sector?

3.6 Critical Issue # 6 — Forest Products

Softwood timber

In addition to a range of non-commodity values, forests provide wood and paper products that we use everyday. Any discussion about the future of forestry must take into account not only conservation, but also consumption, employment and the price of wood products. Consider an example from the United States: public pressure reduced wood harvest on Federal lands by about 70 per cent between 1987 and 1997, but at the same time demand for wood products continued to grow. This combination of reduced supply and increased demand lead to higher prices and increased harvesting on private lands in the United States. Unlike public lands which have standards and goals for wood harvest, private lands are subject to fewer controls and public influence. It is estimated that harvest of softwood timber in the southeast now exceeds the growth rate. The US has also greatly increased the volume of wood it imports from Canada, including PEI. This market opportunity contributed to the dramatic increase in softwood harvest on PEI during the 1990s.

Softwood Lumber and Pulp

The 2000 Corporate Land Use Inventory reported nearly 42,000 hectares of old field White Spruce, down from nearly 58,000 hectares a decade earlier. During the 1990s, large areas of mature White Spruce allowed the industry to grow. This was a windfall from historical patterns of land clearing and abandonment, rather than any coordinated planning or investment. In this sense, most of the softwood harvested during the 1990s was "free" – the trees regenerated naturally on abandoned farmland.

At the start of the 1990s, sawlog and studwood harvest was in the order of 103,000 m^3 per year[9], pulpwood was estimated to be 65,000 m^3 annually, and 90 per cent of the harvest was manual. By 2000, sawlog and studwood harvest had increased to 344,000 m^3 and pulpwood harvest had more than doubled (Figure 9). During this time, the area cut more than tripled and the level of mechanization increased from 10 per cent to more than 80 per cent. While the increase in harvest activity provided industry and landowners with good economic returns, it took its toll on the Island's landscape and other forest values. In short, the economic returns (estimated at about $40 million annually in 2000) came from liquidation of some of the Island's natural capital – our forests. Between 1990 and 2000, the volume of softwood harvest doubled while the number of jobs dropped from an estimated 1,200 to about 600.

The current softwood harvest levels are not sustainable. Forest management activities cannot solve the impending softwood shortage. Even in stands that are appropriate for treatment, it takes about 20 years for improvement work to result in gains, and a comparable period for most plantations to produce commercial products. Yet pressure on the softwood resource remains

[9] 1 cord = 2.3m^3 solid wood

high. In 2003, total commercial wood harvest was about 673,500 m^3, a level comparable to that in 2000.

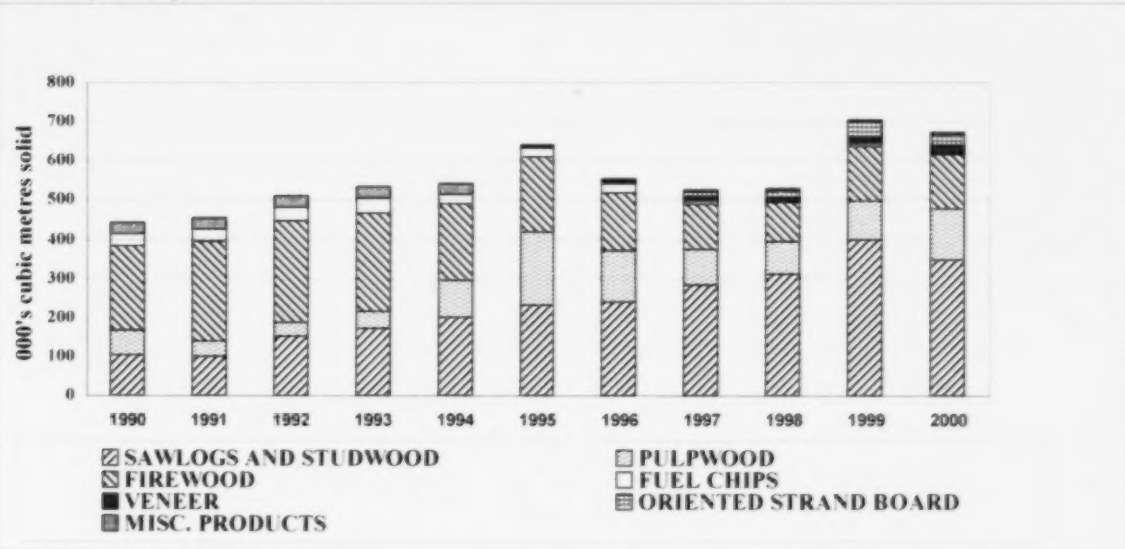
Value-added Products

Islanders add value to the wood harvested here when they process it into products such as moldings, flooring, stair components, furniture, cabinets, and giftware. Most of the higher-value manufactured wood products on PEI are made from hardwood species such as Birch and Maple, and some manufacturers are beginning to look at opportunities for other species such as Poplar. In comparison to investment in the softwood component of the Island's forest, little effort has been expended on hardwood management.

PEI has a thriving value-added sector that produces top-quality products while providing employment in rural areas of Prince Edward Island, getting more value from each board-foot of wood, and keeping jobs and value on-Island. For example, to create or maintain one job at a modern sawmill could require the equivalent of more than 1,000m^3 annually. A typical value-added wood products operation requires 40m^3 to 115m^3 per employee per year, while a talented wood crafter can make a good living using less than 2m^3 annually. Put another way, a modern sawmill creates less than one job per 1,000m^3 of wood, while the same volume of wood can sustain 10 to 25 jobs in the value-added sector.

Over the past decade, Island-made wood products have increased greatly. In 2000, the PEI Association of Wood Product Manufacturers estimated that this industry contributed $8.3 million

Figure 9: *Primary forest products harvested from 1990 to 2000. During the decade, increasing consumer demand, mechanization and changes in sawmill technology contributed to the increase in volume of sawlogs and studwood harvested.*



in salaries and wages, and a total of $38 million to the economy of PEI. Entrepreneurs in the value-added sector pursued new opportunities and have had strong success in export markets. Japan, Europe and the United States are now established marketplaces and Island-made wood products are being used and enjoyed around the world.

Many more opportunities exist, but small wood-products businesses often find the time and expense required to reach new markets prohibitive. Additionally, many existing businesses are at capacity now and need more capital investment and a better-trained local workforce to take advantage of new opportunities. Others are restricted by a lack of market information. Many manufacturers are frustrated that they cannot easily get the wood they need – including under-used species such as Larch, Poplar and Red Maple – from PEI sources. Island hardwood is going for firewood and being exported for pulp while local manufacturers are importing wood from as far away as Quebec and the United States. This points to a breakdown in the supply chain from woodlot owner to end user.

White Pine commercial thinning

Non-timber Products

While timber remains the primary product harvested from the Island's forests, interest has increased in non-timber forest products. The highest-profile of these is Ground Hemlock, which gained attention in the late 1990s because it contains chemicals that help fight cancer. It is estimated that PEI's forests could sustain an annual Ground Hemlock harvest of approximately 636 metric tonnes (1.4 million pounds). The demand for Balsam Fir tips for wreaths also expanded in the late 1990s. While Balsam Fir abounds in the understory of many forests, the needle arrangement of these shade-grown trees looks flat. Wreath-makers need tips from the round-looking branches of fir grown in more open conditions. Supply is limited by the amount of open-grown fir on the Island, but local product can support the creation and sale of thousands of wreaths each year.

The Public Forest Council was established in 2001 to look at the potential of non-timber forest products on provincially owned lands. A public forum held in October 2003 identified more than 35 non-timber forest products collected and used by Islanders. These included maple syrup, mushrooms, fiddleheads, berries, ornamental club mosses and wild game, among other items.

The development of the Ground Hemlock harvest on PEI can serve as a cautionary tale for non-timber forest products. As prices for the raw product rose, so did reports of theft, trespass, and unsustainable harvest. In an effort to determine the extent of the problem, the Public Forest council hosted meetings with harvesters, processors and the public. The council concluded that allegations were true, that the situation was worsening and that the future of wild Ground Hemlock harvest on PEI could be in jeopardy. The group has made recommendations to Government that it hopes will address these issues. As markets develop for new non-timber forest products, good planning and considerations for sustainability will be needed to prevent similar problems.

Trends

To date, most of the timber harvest has been within spruce stands. Declining availability of these sites combined with productivity gains of mechanization (mechanical harvesters can afford to work in stands with lower amounts of softwood), will lead to increased harvest of mixed wood

stands. Additionally, harvest of hardwoods for fuel is linked with oil prices: in the 1990s, fuelwood harvest decreased when oil prices dropped from the high teens to $11 per barrel. Given that today's prices have passed $50 per barrel, fuelwood harvest is likely to increase. Without planning, increased harvest in mixed and hardwood stands for low-value fibre and fuel could pose a threat to the long-term development and stability of the value-added sector.

Forest certification is growing in the marketplace, especially in Europe and the United States. Certification is a voluntary process in which governments, industry and/or landowners agree to manage their forests to a particular standard, usually with independent third-party auditing to ensure the standard is met. Standards vary greatly among the different certification schemes. By June 2004, nearly 58 million hectares of forest land in Canada had been certified under one or more of the main systems: Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI), Organization for International Standardization (ISO) and Canadian Standards Association (CSA). Prince Edward Island is the only province in Canada with no certified forest land, although one group of landowners has been considering FSC certification. Woodlot owners' associations across Canada – including PEI's Woodlot Steward's Co-op – have been developing a Pan-Canadian Certification System for small, privately owned forests.

Comments and Recommendations to Date

The **Round Table report** called for a major shift in forest policy, legislated controls on forest harvest, and more emphasis on alternatives to clear-cutting and replanting with commercial softwood species. In 1998, the Province tabled amendments to the *Forest Management Act* to allow a legislated Forest Contractors Code of Practice. These, and a subsequent set of revised amendments, were withdrawn in response to landowner opposition.

The **Woodlot Owners' Survey** indicated that more than 85 per cent of respondents did not have a forest management plan and were not interested in having one. When asked about their main reasons for owning woodlot, only one per cent of owners identified lumber, two per cent identified income or development and nine per cent identified firewood. Most indicated their main reasons were related to stewardship and legacy. Although this suggests that owning forest land is important while management of this land for wood products is not, the vast majority of the harvest activity has been on private lands.

Public opinion surveys show that 75 per cent of respondents feel that clear-cutting is not an acceptable harvest practice. This is the most commonly used harvest technique on PEI.

A **Hardwood Enterprise Profile** report prepared for the province in 2000 said that an important initiative for Government would be to create policy that provides incentives for high-quality wood to be made available for local manufacturing. The report made several specific recommendations including:

- explore the possibility of establishing a wood yard with sawmill to receive hardwood on a tree-length basis and make sawing decisions at the mill, thus improving wood use;
- demonstrate the high-quality of finished products of Red Maple and White Birch; and
- consider certification of public lands and seek opportunities to gain "class" certification for a large group of relatively small-scale wood products manufacturers collectively.

Key Questions

1. Are forest products a public priority?
2. Should PEI continue to focus on the high-volume softwood sector or put more effort into wood used by the value-added sector?
3. What support should there be for non-timber forest products on PEI?
4. Should PEI explore options for forest certification?
5. What is the role of Government and the private sector?

Appendix 1: Native Trees and Shrubs of PEI

Native Trees of Prince Edward Island

Broad-leaved
American Beech
American Elm
American Mountain Ash
Black Ash
Grey Birch
Ironwood
Large-toothed Aspen
Mountain Maple
Pin Cherry
Red Maple
Red Oak
Striped Maple
Sugar Maple
Trembling Aspen
White Ash
White Birch
Willows
Yellow Birch

Needle-leaved
Balsam Fir
Black Spruce
Eastern Hemlock
Eastern Larch
Eastern White Cedar
Eastern White Pine
Jack Pine
Red Pine
Red Spruce
White Spruce

Native Shrubs of Prince Edward Island

Alternate-leaved Dogwood
Beaked Hazlenut
Canada Holly
Choke Cherry
Common Elder
False Holly
Hawthorns
Highbush Cranberry
Hobblebush
Mountain Alder
Red-berried Elder
Red-osier Dogwood
Serviceberries
Speckled Alder
Staghorn Sumac
Wild Raisin
Wild Roses
Willows
Witch Hazel

Appendix 2: Timeline of PEI Forest History Highlights

Pre-1500 ~ Evidence from fossil pollen indicates that PEI's forest includes a heterogenous mixture of trees including Birch, Maple, Oak, Elm, Ash, Hemlock, Pine, and Spruce, among others. Tools and campsite remains provide evidence of Aboriginal peoples.

1534 ~ French explorer Jacques Cartier sails along the Island's northern coast and reports fine woods, specifically noting Pine, Hemlock, cedar, Elm, Ash and willow.

1719 ~ The first French settlement on PEI is established at Port-la-joye.

1732 ~ The Count of Maurepas issues the first call for conservation of the Island's forests. The reason is rooted in a concern for the settlers' future needs for wood, rather than for the forest itself. A census that year counts 347 settlers.

1798 ~ First organized British census of PEI counts 4,372 people.

1820s ~ PEI's population is estimated to be 23,000 and forest covers approximately 96 per cent of the Island.

1900 ~ PEI's population has grown to 100,000 people, and forest cover has dropped to just over 30 per cent of the Island.

1901 ~ *An Act to Prevent the Destruction of Woods, Forests and other Property by Fires* is passed, but never enforced.

1903 ~ A Forest Commission is appointed and recommends that Government act to reverse the trend of forest loss. No action was taken.

1935 to 1936 ~ The Royal Canadian Air Force completes aerial photography of PEI as part of a training exercise. This is the first such province-wide information in Canada, and reported 186,283 hectares of forest, of which 18 per cent was clear-cut. Decades later, it (combined with subsequent aerial photography) enables the PEI Forestry Division to measure changes in forest cover during the 20th century.

1937 ~ PEI's first tree nursery is established within PEI National Park at Dalvay, and seedlings were mailed to landowners across PEI. It operated until 1947.

1930s to 1950s ~ Land abandonment allows farms to grow up in an unplanned forest of White Spruce. By 1990, nearly 58,000 hectares was classified as old field White Spruce.

1940 ~ Doug Long is hired as PEI's first Provincial Forester.

1950 ~ The *Forestry Act* is passed but never enforced.

1951 ~ The Provincial Government creates a Forestry Division within the Department of Industry and Resources.

1952 ~ A forest nursery is established at Beach Grove. It grows Red Pine, European Larch, Eastern White Cedar, Balsam Fir, White Spruce, Red Spruce and other species. As many as 200,000 trees are planted annually on Provincial lands to establish education and demonstration sites, as well as hedgerows and buffers.

1967 ~ Acres Consulting completed the first forest inventory for PEI.

1969 ~ The PEI Comprehensive Development Plan is signed, bringing a renewed focus on forestry and its potential to contribute to the Island's economy.

1972 ~ PEI began a Tree Improvement program. Through selective breeding, this program aims to improve the growth and form of trees produced by the nursery.

1973 ~ The Royal Commission on Land Ownership and Land Use releases its final report, which recommends development of larger forest management blocks (through acquisition by Government and private landowner co-ops) and support for the sawmill industry.

1974 ~ The Resource Management Incentives (REMAIN) Program is launched as PEI's first effort to support private land forest management plans.

1979 ~ Policy 5 expands the private land incentives of the previous program, and establishes a network of demonstration woodlots.

1979 ~ A study by DPA Consulting recommends an increased provincial emphasis on commercial softwood production.

1980 ~ The J. Frank Gaudet Tree Nursery is opened on Upton Road, replacing the Beach Grove nursery. Production increases to as many as 3,000,000 seedlings annually.

1980 ~ PEI begins its first ever forest biomass inventory.

1982 ~ The PEI Forest Biomass Inventory is the first in Canada to measure total biomass, and predicts the impending shortage of commercial softwood.

1983 ~ The first five-year Federal-Provincial Forest Renewal Development Agreement (FRDA) is signed. Under the agreement, the Federal Government paid between 60 per cent and 80 per cent of costs for programs.

1985 ~ The PEI Silviculture Contractors Association was formed.

1986 ~ Dendron Resource Surveys was contracted by Government to prepare a 20-year Forest Development Plan for PEI. It warns of the impending commercial softwood shortage and prescribes a program to plant nearly 50 million trees by 2005 (an average of 2.4 million annually): 50 per cent White Spruce, 40 per cent other softwoods and 10 per cent other species. Stand improvement is recommended for hardwood stands.

1987 ~ The Dover Seed Orchard is officially opened to provide improved seed for the J. Frank Gaudet Tree Nursery.

1987 ~ The province initiates a "white paper" and public consultations leading to the release of the first Forest Policy for PEI the same year.

1987 ~ PEI adopts Canada's first Provincial Conservation Strategy. It generally supports the 20-year forest development plan, provided attention is paid to issues of wildlife, soil and landscape. To this end, it recommends that forest management plans include wildlife enhancement, and that forest management increase the use of hardwood species and minimize the creation of single-species stands.

1988 ~ The *Forest Management Act* is passed. Among other things, it defines the objectives for public forest lands, requires a regular forest inventory and *State of the Forest Report*, and enables the creation of programs to assist private landowners.

1988 ~ The *Natural Areas Protection Act* is passed. It enables the legal protection of important habitats (including forests) on both provincially owned and private lands.

1988 ~ A new five-year Federal-Provincial Forest Renewal Development Agreement is signed.

1990 ~ The *Report of the Royal Commission on the Land* is released. It makes 17 forest-related recommendations, including increased recognition of the non-commercial benefits of trees and more emphasis on hardwood management.

1990 ~ PEI's second forest biomass inventory begins.

early 1990s ~ Industry begins to mechanize. By 2000, the industry had changed from 90 per cent manual harvest to about 80 per cent mechanical.

1991 ~ The Forest Improvement Association (FIA) was incorporated.

1993 ~ PEI's first State of the Forest Report is released.

1993 ~ The Province releases the second PEI Forest Biomass Inventory and the first *State of the Forest Report*.

1993 ~ The Federal Government announces that its financial support for forest management on PEI will end on March 31, 1995. A new Forest Renewal Program is developed which (by 1996) includes an industry contribution of $2 per cord of softwood harvested.

1994 ~ The Province releases A Renewed Conservation Strategy for PEI, which adopts an ecosystem approach to sustainability. The (then) Department of Environmental Resources commits to working with other departments to promote ecological diversity on both provincially-owned and private lands.

1997 ~ The Round Table on Resource Land Use and Stewardship releases its final report. Among other things, it recommends an increased emphasis on late successional hardwoods, an increased range of incentives for private land management, elimination of incentives for non-native or single-species plantations and designation of Provincial Forests.

1997 ~ A voluntary Forest Contractors Code of Practice is introduced. Fewer than half of contractors sign on, and many monitored sites fail to meet the standards set by the code.

1998 ~ The province tables amendments to the *Forest Management Act to* allow a legislated Forest Contractors Code of Practice. These, and a subsequent set of revised amendments, were withdrawn in response to landowner opposition.

1998 ~ The *Wildlife Conservation Act* is passed. It enables the development of policies and programs to conserve wildlife habitat, and includes provisions for the protection of species-at-risk.

1999 ~ Amendments to the *Environmental Protection Act* place some restrictions on forest harvest activity within 20 to 30 metres of a watercourse.

1999 ~ The Forest Improvement Advisory Council is appointed to advise the minister on issues relating to forest management, worker training, education and conservation. The council was disbanded in 2001.

2000 ~ A network of Provincial Forests is proclaimed. This network includes 18,900 hectares of land across the province which is managed by the Forestry Division for multiple uses.

2000 to 2002 ~ A combination of aerial photography, air photo interpretation and field work is used to create the Corporate Land Use Inventory which provides details about agricultural, forest, urban, recreational and industrial lands on PEI.

2001 ~ The province establishes the Public Forest Council to spark public discussion and involvement in non-timber forest use of provincially owned lands.

2002 ~ The province announces a Sustainable Resource Policy for PEI. One goal of the policy is to improve forest quality.

2003 ~ A survey of PEI's woodlot owners is released. It provides information about landowners' reasons for harvesting or not, their concerns about sustainability, and attitudes about a range of forest management practices.

2003 ~ The second *State of the Forest Report* is released and shows that – for the first time in more than a century – PEI's forest area has decreased, primarily because of conversion to other uses on private lands.

2003 ~ The province's first *State of the Environment Report* is released. Forest cover and type are topics under the biodiversity and land use indicators. Other indicators include drinking water quality, surface water quality, climate change, energy use, air quality, pesticides, waste management, environmental stewardship and soil quality.

2003 ~ The first Model Forest outreach project on PEI is officially launched. Operating under the name "Island Sustainable Forestry Cooperative Limited" (later changed to PEI Model Forest Network Partnership, Inc.), the project brings together government, industry, conservation groups, landowners and academia to increase awareness of the range of forest values.

2004 ~ The province launches discussions to create a new forest policy for PEI.

Appendix 3: Glossary

Clear-cut: an area of one hectare or more from which more than 90 per cent of the merchantable trees have been cut and removed, and on which there is no evidence of conversion to non-forest use.

Commercial thinning: the removal of up to 48 per cent of the live trees in a given area to effect a species change and/or accelerate growth. Typically, the harvested wood will have merchantable value as pulpwood, fuelwood or saw logs.

Crop tree: any tree selected for a present or future harvest.

Crop tree release: management that removes some trees and other vegetation around crop trees to improve their growth and form.

Cut-over: an area of land from which some of the timber has been recently cut.

Enrichment planting: planting trees or other plants in a forest to increase diversity and/or the range of forest products.

Native species: a plant or animal that occurs naturally in an area. Sugar Maple, Black Spruce, Yellow Birch and Eastern Hemlock are examples of native tree species on PEI.

Non-native species: a plant or animal which was intentionally or accidentally distributed outside its historic range by human activities. Norway Maple, Norway Spruce, European Birch and Japanese Larch are examples of non-native tree species on PEI.

Patch cuts: A series of small cuts (less than one hectare) done to encourage the growth of desirable regeneration, open up areas for enrichment planting and/or enhance wildlife habitat.

Plantation: an area of land on which trees were planted to a prescribed density (often 2,200 to 3,200 seedlings per hectare). Typically, plantations are managed to favour one or two species of trees for wood production.

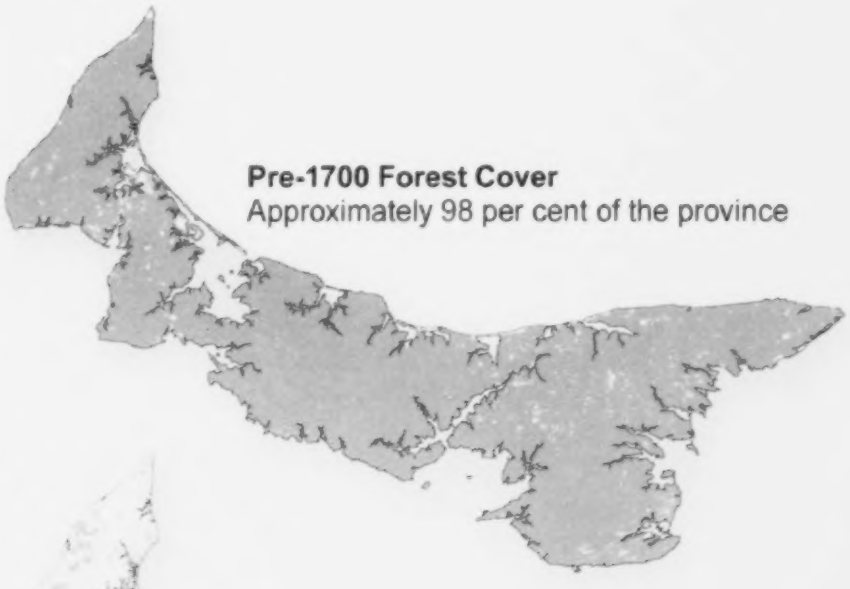
Pre-commercial thinning: tree cutting to effect a species change and/or accelerate growth. Typically, wood cut will not be merchantable.

Riparian zone: the land bordering streams, ponds or other watercourses.

Selection harvest: removal of trees either singly or in small groups, to effect a species change, accelerate growth of the remaining trees and/or encourage shade-tolerant regeneration.

Strip cuts: a series of cuts done in strips to encourage the growth of desirable regeneration, open up areas for enrichment planting and/or enhance wildlife habitat. Strip widths are usually one to two times the height of the tallest trees.

Prince Edward Island Forest Cover 1700 to 2000



Pre-1700 Forest Cover
Approximately 98 per cent of the province

Pre-1900 Forest Remaining in 2000
27 per cent of the province

2000 Forest Cover
45 per cent of the province

Prince Edward Island
CANADA

Environment, Energy and Forestry
Forestry and Land Resource Modeling

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